July 2, 1962

NOTES - CONSTAN 7/2/62

7-5-62

1. CONTRACTS

a. On June 29, 1962, bids were opened by M-P&C for the removal of grillage in the manufacturing area at Michoud. The low bider was the Gurtler-Hebert Company. This is the same company that performed the initial renovation for the Michoud facility. ✓

b. Consideration is being given by Michoud and Facility Engineering office to modify the Vector contract to permit additional work to be performed by Vector for Chrysler. ✓

2. COMPUTER OPERATIONS

On June 25, 1962, Mr. John Mahan, NASA Headquarters, visited Michoud Operations to review the plans for the Data Processing Computer Facility. Mr. Jack Enochs, Computation Division, and Mr. Harry Fowler, Michoud Operations, escorted Mr. Mahan during his visit at Michoud. The purpose of the visit was primarily that of orentation for Mr. Mahan.

H. Gorman for the presentation in Washington you should inform yourself on this. Bo

* gcm

3. REPORTS

Chrysler Space Division has submitted to Michoud an initial PERT network which complies with the latest instructions of Saturn Systems Office and Central Planning Office. This network is presently being reviewed by Michoud Operations. ✓

4. SURPLUS MATERIALS

what? gcm

Mr. Al Hodgson, NASA Headquarters, telephonically requested information as to whether MSFC or our contractors have had any contact with Delgado Trade School. He was advised that the Chrysler Corporation had made a tour of the facility at the Delgado trade school, that Boeing has had no direct contact with the school, and that MSFC's only contact was through the Health, Education, and Welfare Department with respect to supplying surplus materials for use in the school's training program. Mr. Mahan's request was in response to a Congressional inquiry. ✓

NOTES 7-2-62 DEBUS

7-2-62

1. Jupiter CTL: MOAMA has requested that we utilize a stabilized platform (ST-90) containing Minneapolis-Honeywell gyros, which will not meet drift specifications for the ST-90 systems. Dynamic operation of the stabilizer system would not be affected, however, accuracy (CEP) could not be expected to approach the Weapon System requirements. Discussions are still in process and a decision is expected shortly.

2. SA-5 Proposed Reschedule: M-SAT has consulted us in reference to a problem of rescheduling SA-5. Apparently, M-P&VE and Aeroballistics are concerned about possible buffeting and stresses in the interstage area between S-I and S-IV. To achieve earlier flight tests, they propose an "inactive" and specially instrumented S-IV be flown on SA-5 booster. M-SAT proposed that the vehicle be delivered by March 15, 1963 to be used for facilities checkout as well as for launch. I have discussed the problem with Rees. It is my opinion that the problem should be investigated on SA-4 by delaying the presently planned schedule for SA-4, and that SA-5 should continue with its planned mission for the active engine tests of S-IV. We will discuss this further at MSFC this week. ✓

* 3. The Gaseous Hydrogen Vent Coupler, on the umbilical swing arm Nr 3 (for Saturn S-IV stage) at LC 37, failed in its functional test and was, therefore, unacceptable. Redesign of this coupler is in process by Douglas Aircraft Company. ✓

4. General MacDonald (Retired USA General, Consultant to Webb): Reference my note last week. He appeared to be interested in all areas of logistics. Had several discussions with our people on the transport modes and methods to be employed for the MLLP area development. He was extremely interested in the community development aspects, road and causeway problems, housing, and the feasibility of utilizing Cocoa-Titusville airport for NASA activities. ✓

5. Additional Atlas/Agena Pad at AMR: Approval has been received to proceed with design immediately of an additional Atlas/Agena pad at AMR. Criteria money in the amount of $75,000 will be available approximately July 2. Jack Rosenberry states that plans are underway to make a dual use pad of this for Centaur as well. ✓

6. Diluzio: Due to illness in his family, he will not be able to give me a decision until July 15. However, it looks promising. In the meantime, I have appointed Parker as "acting" in the position as Associate Director for Administration. ✓

7. Copy of NOTES to Holmes attached.

NOTES 7-3-62 DEBUS

FOR LIMITED USE AND DISTRIBUTION TO: Mr. Holmes
Mr. Lilly
Mr. Rosen

7-2-62

1. General: With the activation of LOC as of July 1, 1962, my weekly comments to OMSF are hereby initiated. It is my understanding that this channel will be a privileged channel of information consisting of a digest of items at LOC considered of importance in their formative stages and that no action will be undertaken by other elements of NASA based on the information presented. Action requirements will be initiated by LOC through proper action channels. Details of any item appearing in the NOTES will be furnished upon request. ✓

2. General MacDonald (Retired USA General, Consultant to Webb): He visited LOC last week and appeared to be interested in all areas of logisitcs. Had several discussions with our people on the transport modes and methods to be employed for the MLLP area development. He was extremely interested in the community development aspects, road and causeway problems, housing, and the feasibility of utilizing Cocoa-Titus ville airport for NASA activities. ✓

3. Real Estate Acquisition: A license has been received from the State Road Department of Florida authorizing the U. S. Government to alter, reconstruct and maintain State Route A1A from the junction of A1A and 402 to the south boundary of the acquisition area. ✓

4. MSC Operations and Checkout Building, Merritt Island: Invitations for Bid for 200,000 yards of fill material were issued June 29. Fill completion schedule September 1, 1962.

5. Additional Atlas/Agena Pad at AMR: Approval has been received to proceed with design immediately of an additional Atlas/Agena Pad at AMR. Criteria money in the amount of $75,000 will be available approximately July 2. Jack Rosenberry states that plans are underway to make a dual use of this for Centaur as well. ✓

6. Common GSE and Solid Propellant Vehicles Studies: The Air Force Space Systems Division has a study (approximately $500,000) to review all available GSE and facilities for use with solid propellant vehicles; also to determine manufacturer, transportation and launching problems to be expected for vehicles up through the Nova class. Representatives of the Air Force SSD together with American Machine and Foundry Company personnel visited LOC in connection with this study. ✓

NOTES - GEISSLER - 7-2-62

7-5-62

1. SATURN FLIGHT EVALUATION WORKING GROUP: The Saturn Flight Evaluation Working Group met with the stage contractors of the C-5 program on June 26, 1962. The purpose of the meeting was to introduce the contractors to their role in the C-5 Engineering Evaluation. ✓

2. FLIGHT EVALUATION AUTOMATION: An evaluation was completed of the bidders on the contract for Automation of Flight Evaluation. RCA, Aerospace Communications and Controls Division, Burlington, Massachusetts was selected. ✓

3. SATURN OPERATIONAL FLIGHT CONTROL: A meeting of the Saturn Operational Flight Control contract steering committee was held on June 27, 1962 at Cape Canaveral to review contract progress. Visitors from GSFC and MSC were present. Strong criticism of contract progress by the contract monitors was endorsed by the Steering Committee, and action is being taken to improve future performance. ✓

Dr. Debus (M-LOD) has resigned the chairmanship of the Steering Committee, and Dr. Speer (M-AERO-F) was appointed in his stead. Mr. Kurtz (M-AERO-F) will now serve as secretary to replace Dr. Speer. ✓

4. CENTAUR F-1 FLIGHT EVALUATION: Comments from MSFC evaluation and project groups on the GD/A evaluation report of the Centaur F-1 flight were compiled and forwarded to M-L&M-DIR in a memo ("MSFC Comments to GD/A Report 'Flight Evaluation Report F-1'", June 22, 1962). ✓

5. MSC-MSFC WIND TUNNEL TESTING: To this date the cooperation between MSC and MSFC in the area of wind tunnel testing has been remarkably good. This may be noteworthy in view of frequently voiced statements to the contrary in other areas. A good example is a large scale pressure model of SA-5 now being tested in NAA's and Ames' wind tunnels. NAA built the model and incorporated additional measuring taps at our request; MSC arranged that for us. We are also furnishing some model hardware and loaned them a 14-channel tape recorder, with a technician to service this equipment. Ames is going to reduce the test data produced in their tunnel. Ultimately, MSC and MSFC will sit together and interpret the results as this project was set up as a "joint venture." This test and several others, some of which are carried out under our cognizance, will be the foundation for the pending decision of SA-5 which will be flown with the Apollo capsule or a plain conical nose. ✓

Mr. Gahm, does this model have all the attachments such as retrorockets, ullagerockets etc on, which make the interphase between S-I and S-IV aerodynamically "dirty"? Do we get out of these tests also information helpful to our problems we discussed on July 3 or can they merely serve to solve the issue Apollo capsule configuration vs. plain conical nose on SA-5?

7-5-62

NOTES 7-2-62 GRAU

7-5-62

*1. S-1-4 ENGINE PROBLEM: Due to high torque, the turbine was removed from Engine H-1058, position 8. Turbine R088R was found to drag and after disassembly the 1B carbon seal was found to be seizing on the shaft. The turbine will be rebuilt at MSFC and re-installed.

2. SA-4 PRE-STATIC CHECKOUT: Pressure-functional testing is continuing with 8 of the 14 systems being tested. It is anticipated that the test schedule will be maintained.

*3. SA-3 FINAL CHECKOUT: The air bearing flow test was conducted on the ST-90 and associated equipment. The ST-124P has not been delivered, which will delay release date of the vehicle by two days. The automated equipment, used for the first time, is proving satisfactory.

4. CENTAUR: Checkout sequence on vehicle C-2 (F-2) will correspond to MSFC philosophies. A formal proposal for a vertical Atlas/Centaur/Spacecraft Combined System Test Stand has been submitted to MSFC for evaluation. A preliminary proposal for an Interim Combined System Test Stand utilizing horizontal checkout has also been submitted.

NOTES - HAEUSSERMANN, 7/2/62

B
1-8-62

No submission for this week.

NOTES 7/2/62 Helmburg

B
7-5-62

1. S-IV COLD FLOW TEST PROGRAM AT DAC:

Difficulties with facilities postponed cold flow, start until 7/6/62. In our opinion, this is optimistic. Hot firing would then be about 7/13/62. MSFC representatives have returned to Huntsville and will await word on start before returning to DAC. ✓

2. CENTAUR:

Test Division group spent last week on the West Coast again reviewing facilities and test plans. ✓

3. MODEL STUDIES:

The 1:20-scale model (SA-5 configuration) launch deflector study for VLF-37 has been completed. A report is being prepared. ✓

The 1:58-scale model deflector study for the C-5 West Area Static Test Stand has been completed and a report is being prepared. ✓

Test hardware is being prepared for a program on 1:58-scale model deflectors pertinent to VLF-39 (C-5). ✓

4. MARINE ACTIVITIES:

A presentation was made at NASA Headquarters outlining the MSFC transportation program. Mr. B. Holmes, Mr. M. Rosen, and Mr. R. Canright were also informed of our intent to proceed with negotiations for the off-shore ferry, S/S NEW GRAND HAVEN.

5. M.T.F.:

Joint presentation by Test Division with assistance from Facilities Engineering Office and the A-E Contractor, Sverdrup & Parcel, was made on 6/27/62, to Dr. Rees, NASA Headquarters, MSFC, and Corps of Engineers personnel, relative to status at MTF. Work under the present contract was revealed to be approximately 30% complete. The proposed master site plan for MTF is scheduled to be presented to you on 7/17 or 7/18 for necessary approval.

Mr. Heimburg: Why is the launch deflector for SA-5 on VLF-37 different from the one used on SA-1 thru SA-4, VLF-34, (I am talking about the main deflector) ?

Rees

gcm

R
7-5-62

NOTES 7-2-62 HOELZER

1. CENTRAL COMPUTER FACILITY AT MICHOUD: The next action which must be taken to establish the computer facility at Slidell is to let a contract for the operation of this facility. The scope of work for this contract is presently in Purchasing & Contracting, but will not be issued until certain questions concerning the central facility are answered. It is still planned that the facility will be operating by October 1, 1962 according to the information furnished in the NOTES of 6-4-62. (Attachment 1). Mr. R. L. Reeves, of this division, is presently at Slidell on an extended TDY. It is planned that he will be transferred to Michoud Operations within 30 to 60 days. The ball is necessarily rolling pretty fast in order to meet the target date of October 1, 1962. Basic and urgent decisions have been and are being made concerning the central facility and if there is to be any change in the policy so far developed concerning a central computer facility at Michoud this should be done right away. ✓

2. SCIENTIFIC COMPUTER SUPPORT FOR LVOD AT CAPE CANAVERAL: The Computation Division will continue to support LVOD at Cape Canaveral in the area of scientific computation as has been done in the past. In particular, this division will supply the Measuring and Tracking Office with a GE 225 computer and some 7 GE personnel to support this computer. It is further expected that this division will perform large scientific calculations for both LVOD and LOC on the computers located in Huntsville. LOC will support both LVOD and LOC in the area of ADPS at the Cape. Computation Division will continue in communications with this effort, but will assume all implementation will be done by LOC. ✓

3. PERSONNEL MOVE TO BUILDING 4723: Some 4,000 square feet of floor space in building 4723 has been made available to this division for personnel. This has been done in order to make possible the move of the entire PERT effort of Central Planning Office to building 4663. It was imperative that the PERT effort be located near the computers so that inputs, outputs, and charts would be readily accessible. Computation Division has moved the following people into 4723 - the IBM contractor group involved with the Data Center (11 people), and the ADPS group supporting Manufacturing Engineering Division (1 Civil Service and 7 GE). It is felt that this space will be functionally satisfactory on an interim basis. ✓

NOTES 7-2-62 Koelle

7-5-62

1. HYPERSONIC RESEARCH AIRPLANE

I attended a discussion on this subject last week in the Office of the Director of Aeronautical Research at NASA Headquarters. All Research Centers presented their views on hypersonic research. I explained our interest in recoverable boosters, particularly the two-stage rocket airplane for logistic supply of space stations. There was a two-hour presentation to Dr. Seamans, Mr. Dixon, and Dr. Bisplinghoff thereafter. This discussion was in preparation for a coordination meeting with the Air Force to be held on July 20, 1962. No decisions were made.

2. FY 1962 STUDY FUNDS

Our office has obligated all study funds allotted to us for the past fiscal year with the exception of the NOVA study funds, which were frozen by Mr. Holmes. Presently we have 21 study contracts with industry on advanced space transportation systems and elements thereof.

The present contract volume breaks down as follows:

Company	No. of Contracts	Total Funding
		$ 864 x 10^3
Lockheed	6	406
Martin	2	395
General Dynamics	3	393
Boeing	2	255
STL	1	235
NAA	2	156
RAND	2	149
Vought	1	84
Aeronutronics	1	73
Douglas	1	
	21	$3,030 x 10^3

R
7-5-62

NOTES 7-2-62 KUERS

* SA-5: The structural work on the Tail Section and 2nd Stage Adapter for SA-5 has been completed and the two structures delivered to the Assembly Shop. The clustering of SA-5 cannot be started, however, because the big pressure sphere and the containers from Chance-Vought are not ready for assembly. Since many other components from outside are still not available, it is anticipated that it will not be feasible to catch up the four weeks delay encountered in the structural area. The forecast for delivery is two weeks later than originally scheduled.

gam

V

NOTES 7-2-62, Lange

B
7-5-62

1. C-1 - S-I Stage

SA-3 - Undergoing post-static checkout. Prep for shipment scheduled 8-17-62.

SA-4 - Undergoing pre-static checkout. Position #8, engine 1058 turbine was changed out. Booster on schedule.

SA-5 - Clustering to start 7-5-62.

SA-D5 - Estimated completion date for tail section 8-6-62. Required engines will be pulled from SA-D1. All tanks expected by 7-28-62.

CSD Contract - Formal negotiations are continuing. Technical work statement and terms and conditions of contract have been negotiated. Cost currently under negotiation with expected completion 7-6-62. Delivery to NASA Hqs. expected mid-July.

Mission SA-4 or SA-5 - Incorporation of S-I/S-IV fairing to check buffeting is under study.

S-IV Stage

Hydrostatic Vehicle - A positive proof pressure test was conducted this week. The LOX tank was filled with LN_2 and pressurized at 37.5 PSIG for five minutes, no leaks were detected. Second phase of the test will begin about July 9.

All-Systems - The common dome is being fitted for welding of the LOX tank.

SA-5 - The honeycomb is being fitted for the forward dome.

Douglas people have had approx. 25 meetings with NAA on the S-IV stage work (and S-IVB design, honeycomb, bulkhead fabrication, etc.).

SACTO Cold Flow Test - LOX flow delayed by 8 facility hardware malfunctions. LOX flow and H_2 Flow now scheduled for period 7-5 to 10-62.

2. C-5 - The C-5 project summary was issued this week. The PDP Tech. Description was written for S-IC and S-IVB, the S-II Description is in process.

S-IC - A joint Boeing/MSFC meeting is scheduled for 7-2-62 to submit MSFC's comments on the Boeing proposed S-IC Make-Buy/GFE Plan.

Boeing will submit cost proposal for the 90 day extension to the Contracting Officer on 7-2-62. They are also developing cost proposal for the definitive contract.

MSFC requested the contracting officer to modify the existing Boeing contract and the $1,800,000 Wichita Tooling Supplement to include Quality provisions that are in accordance with Hq's policy.

A scope of work for S-IC Development program was forwarded to P&C this week for use in preparation of a request for quotation to Boeing.

S-II - MSFC and WOO began pre-negotiation activities. NAA will re-submit the Santa Susana Test plan for AF approval with emphasis on the battleship program. NAA plans to provide cost breakdown of air frame and GSE end items this week.

S-IVB - Final negotiations for the DAC hardware contract will begin 7-9-62. Contract target date is 8-1-62. The technical definition of program is being evaluated. Significant program adjustments are required but will not be implemented until after contract date to avoid delay in contract negotiation. Emergency authorization of C of F funds for the complex Beta Test facility has not been granted by NASA Hqs.

3. Apollo - Following MSFC/MSC meetings took place: Launch Oper. Panel at Caps 6-20-62 assigning work to 7 sub-panels; On-Board Instr. & Communication Panel at Houston 6-27-62 decided on measurements & frequencies for C-1 Apollo; C-1B Mtg. at Huntsville 6-28/29-62 set deadline of 7-31-62 for joint proposal.

NOTES, 7-2-62, Maus

1. NASA/DOD PERT/COST SYSTEMS DESIGN - Copies of the DOD and NASA Guide on PERT/COST were received from Headquarters with a request for comments. Divisions, project offices and we are reviewing the document and will comment by the required date. (July 13, 1962) ✓

2. PROGRAM REVIEW - A Program Review was held in Office of Manned Space Flight on Wednesday, June 27, 62, with MSFC representatives participating. The requirements for the 1st qtr. FY-63 were presented. No exceptions were taken by OMSF. Mr. Rosen stated that neither the FY-63 appropriation for the FY-62 supplemental bills had been passed by Congress and that they were not expected in the near future. He stated that he had no knowledge of the wording which would be contained in the continuing resolution to allow us to operate in the interim. He did say that "he understood" that approximately $100,000,000 would be allocated to OMSF (to carry OMSF, MSC, MSFC and LOC) for the month of July. This is considerably lower than the requested figure. Very careful review was made of the column "First Half July" which stated our fiscal requirements and increased the amount desired in the Saturn C-1 and the J-2 Engine Programs. Mr. Rosen stated that he would fight to obtain the requested amounts. ✓

3. OMSF PROGRAM DOCUMENTATION - During Mr. Goodrum's visit to OMSF, the proposed OMSF directive "Management and Program Documentation" was discussed. Our comments on this document had been furnished previously by telephone. Mr. Velander (Mr. Little's office) stated he understood our comments and appreciated our suggestions: that these had been discussed in the OMSF and that the document was now being prepared in final form. He indicated that OMSF had no intention of tightening managerial controls on field centers. He further indicated that Mr. Holmes would like very much to see the field centers attempt to implement this directive within their own organizations. ✓

4. LONG RANGE PLAN - Mr. Waite of Central Planning has visited the Office of Program Review and Resources Management (Mr. Lilly) to discuss the NASA Long Range Plan. Points of information are: (1) OMSF would like to establish a procedure for developing and maintaining current a 10-20 year Manned Spaceflight Plan. (2) All major program actions would be taken in accordance with this plan or a plan revision would be initiated. (3) Consideration is being given to the establishment of an Ad Hoc Committee composed of OMSF, MSFC, MSC, and LOC representatives which would meet quarterly to review and coordinate the Manned Spaceflight Long Range Plan. ✓

B
7-5-62

NOTES MRAZEK 7-2-62

1. BOEING PERSONNEL: Number onboard as of 6-28-62: 322.

2. S-IC: The decision has been made to use ring-type baffles in the cylindrical portion of the tank and cruciform-type baffles in the lower heads. An ultimate pressure load of 5 psi will be used as design criteria.

3. RIFT: RIFT Contract signed by NASA Headquarters on 6-28-62.

4. S-IV STAGE BATTLESHIP TESTING: Cold flow test was conducted on 6-29-62. Test firing will take place 7-7-62.

5. S-IC ENGINE GIMBAL SYSTEM: A number of studies for this system have been completed. Various vendors have been contacted regarding components and preliminary specifications. Requirements have been established for the 4000 psi breadboard system.

NOTES 7-2-62 Rudolph

Negative

Mr. Heller: Please omit. Jam 7-2

NOTES 7-2-62 Stuhlinger ~~(Heller)~~

OK Jam

*1. OMSF SUPPORTING TECHNOLOGY PROGRAM: In response to rather vague guidelines from OMSF, a FY-1963 1st Quarter Supporting Technology program was prepared. The 1st Quarter requirements totalled $2.340 M, with the majority of them in the area of Launch Vehicle Loads and Structures. The program was reviewed by and received concurrence from Mr. Norman Rafel of OMSF, and was presented by Mr. Miles of RPD at the 1st Quarter Program Review Meeting at OMSF on June 27. OMSF did not commit itself to 1st Quarter funding, but when Mr. Canright of OMSF visited MSFC on June 8 he indicated that OMSF hoped to provide a total of 6.5 M to MSFC for the FY-1963 Supporting Technology Program. ✓

R 7-5-62

2. MSFC APPLIED MATHEMATICS EFFORTS: Dr. Raymond H. Wilson, Chief of Applied Mathematics at OART, visited MSFC on June 26 and 27 to review the MSFC applied math program and discuss funding for FY-1963. Mr. Heller and Dr. Lundquist of RPD discussed the fiscal aspects with Dr. Wilson, and technical briefings were presented to Dr. Wilson by personnel from Aeroballistics, Computation, Propulsion and Vehicle Engineering, and Research Projects Divisions. Dr. Wilson seemed favorably impressed with the MSFC applied math program and gave an optimistic opinion on obtaining adequate funding in this area for FY-1963. He outlined OART's new proposed formula for allotting applied math funds to each center: (a) $10,000 per year for each direct personnel position in applied math reported by the center and (b) $50,000 or less per year for each of one-half the number of direct positions, to fund contracts to be let by the center. MSFC had not been advised of this formula when it submitted requests for FY-1963 funding. Many personnel working in applied math were classified instead according to the projects to which this research is applied. Hence our funding in this area was drastically cut in the OART preliminary fiscal guidelines for FY-1963. A justifiable reclassification of such personnel, in keeping with OART's definition of applied mathematics and with the full cognizance of Dr. Wilson, has been undertaken. Satisfactory modification of the fiscal guidelines should now be effected. ✓

3. MADKIN MOUNTAIN ANTENNA: The Army has formally offered the 84-foot antenna on Madkin Mountain to NASA. A NASA evaluation team, consisting of personnel from Headquarters, Goddard, JPL and MSFC has been formed to study the offer; a meeting was held at MSFC on June 20 and further meetings will follow. Mr. T. A. Barr, Astrionics Division, and Mr. A. W. Thompson, Research Projects Division are the MSFC representatives. ✓

← To what extent is NASA Hdqs informed?
Please reply on next weeks NOTES. Jam 7-2

NOTES WEIDNER 7-2-62

1. H-1 PROGRAM: The Procurement Plan for one hundred and fourteen (114) H-1 engines was approved by NASA Headquarters on 6-28-62.

Western Operations Office plans to issue a Letter Contract to Rocketdyne immediately to allow the procurement of long-lead hardware.

2. J-2 PROGRAM: A letter contract for deliverable J-2 engines became official on 6-27-62. This contract will cover a 90-day period for the amount of $1.7 million.

We had the longest successful run (11 seconds) on 6-30-62.

The management meeting between MSFC, OMSF, and Rocketdyne scheduled for 6-27-62, at MSFC was postponed indefinitely.

3. RL10 PROGRAM: An RL10A-1 engine was successfully throttled down to a chamber pressure of 170 PSIA (approximately 57% thrust) at the Lewis Research Center. A mixture ratio of 5 to 1 was maintained throughout the transient. A 33% thrust level is anticipated for the next firing which is scheduled for 6-29-62.

The throttling program authority has not been received from OMSF. Last week MSFC, Lewis, HQ (Schillito) and P&WA were in agreement as to the Program. A scope of work and general plan has been hand carried to OMSF.

4. M-1 PROGRAM: The budget requirements for the M-1 program for the next few months were discussed at the FY-63 first quarter budget review. The only problem area mentioned was the possibility that FY-63 C of F funds will not be available in the first few months of FY-63. It may be necessary to use R&D funds for equipment-type items under the facilities contract during this period.

5. F-1 PROGRAM: The 1.0M letter contract for procuring long-lead hardware to support the F-1 Engine follow-on R&D program and the 3.4M letter contract for deliverable F-1 Engines and Associated Support were signed by Rocketdyne on 6-27-62 with contingencies. These contingencies were in the Financial Reporting, Program Evaluation and Review Technique, and the Line of Balance provisions wherein the contractor reserved the right to negotiate the final wording in the definitive contract.

Engine 008 had rough combustion cut-off at 105 seconds with ensuing rupture of main fuel valves and fire. Engine total loss. More details next week.

6. GENERAL: The H-1, J-2, RL-10, F-1 and M-1 engine programs were reviewed during the 1st FY-63 Quarterly Review at OMSF on 6-26/27-62. All programs were in general accepted with increased effort for the J-2 R&D (from $26 to $31 million) as the most major change from previous plans. Milton Rosen stated that the Engine programs (primarily the J-2 and F-1) must be properly funded as they are pacing the Vehicle Programs.

July 9, 1962

NOTES - Gorman - 7/9/62 B7-9

Negative report.

B 7/9

NOTES 7/9/62 CONSTAN

1. RENOVATIONS TO MANUFACTURING BUILDING

The Gurtler-Hebert Company which was awarded a contract for removal of a portion of the falsework in manufacturing building commenced work July 5, 1962. Estimated date of completion is August 4, 1962. ✓

2. QUALITY ASSURANCE

* GCM 7-9-62

by Constan to MSFC

A presentation to Rees, Gorman, Neubert, Maus, Lange and Grau relative to the quality assurance program at Michoud Operations is scheduled for July 12, 1962. ✓

3. CONTRACTS

a. Chrysler awarded a fixed price contract in the amount of $2990 to Boh Brothers Construction Company, New Orleans, on June 28 for removal of concrete floor in tail assembly area. ✓

b. Chrysler has proposed to award a fixed price contract estimated at approximately $762,426.00 to the Louden Machinery Company, New Orleans for the installation of overhead bridge cranes, trollies, hoists and associated equipment within the Chrysler allocated plant area. ✓

NOTES - Gorman - 7/9/62

B7-9

Negative report.

B 7-9

NOTES - DEBUS - 7/9/62

No NOTES received this date.

NOTES - GEISSLER - 7-9-62 B 7-9

1. FLOATING SUPPORT FOR DYNAMIC TEST VEHICLES: During the last few weeks, the Subcommittee for Control Dynamics and Structural Feed-Back has made a detailed review of proposals and drawings for the floating support of dynamic test vehicles. As a result, it was decided unanimously that Test Division's shop will build the first pair of supports and after testing and making any necessary modification, will supervise the manufacturing of the additional six to eight supports. One bearing plate was manufactured and is ready for a single bearing test. The purpose is to determine the adequacy of stiffness and surface finish. Test Division was also authorized to make modification for ease of manufacturing. Modifications which might have functional effects will be discussed in small ad hoc working groups or before the subcommittee. So far, a considerable relaxation of the Chrysler specified tolerances has been approved as they will not affect accuracy or functioning of the support device.

2. SA-2: The Saturn SA-2 Flight Test Data Report has been completed.

3. CENTAUR APPRAISAL: The appraisal of the Centaur vehicle is progressing although considerable difficulty has been encountered due to misunderstanding of ground rules and delays in obtaining information from GD/A. Personnel from GD/A have been extremely cooperative but distance has caused problems. Preliminary studies indicate that if the MSFC winds aloft are used, control of the vehicle during ascending flight is not probable. Under the same criteria the probability of launch is extremely low.

4. PROJECT GEMINI: During discussions with MSC personnel at Houston it was indicated that the level of effort expected from MSFC would be considerably more than originally anticipated. If Aeroballistics is expected to monitor the target vehicle it will mean a considerable workload. It is extremely desirable at this time to know exactly what is expected of MSFC and what we are committed to do in this program.

Omitted this sentence from TWX to Holmes

Bucci 7-9

NOTES 7-9-62 GRAU B 7/9

1. SA-3 POST-STATIC CHECKOUT: The testing is progressing satisfactorily; however, it will be necessary to enter each lox tank to replace defective liquid level probes which are a new type and not used on SA-1 or SA-2.

2. SA-4 PRE-STATIC CHECKOUT: Pressure and functional testing is essentially complete. Electrical performance testing continues with network tests to follow.

3. SA-5 CONTAINERS: Pressure functional testing was completed on three tanks received from Chance Vought. One fuel tank will be processed in the next few days. This will complete the receiving inspection of all SA-5 tank assemblies.

4. CENTAUR: The first guidance computer of the -3 configuration (Serial No. 1) has been received from Librascope and has passed functional tests at GD/A. Vehicle F-2 is now undergoing Pre-Propulsion System Tests in the factory. Actual Propulsion System Tests (tanking, cold-flow and hot firing) are scheduled to begin at Sycamore Canyon on July 26.

5. NASA INSPECTION STAMP: A proposed inspection stamp design and operating procedure has been prepared and it is planned to submit it to NASA Headquarters for their review and coordination with other NASA installations.

6. VENDOR CODE BOOK: A presentation to the Apollo Resident Office and the Space and Information Systems Division of NAA on the adoption of our vendor code book was made recently in Downey, California. S&ID personnel will review our code book and give an answer by July 15th on whether or not they could adopt it on both the Apollo and S-II programs.* This Vendor Code book is an improvement over the Federal Supply Code for Manufacturers and gives us easy access to such information as vendor name, complete address, item supplied and cognizant government inspection agency through our Automatic Data Processing System.

7. IBM GUIDANCE SIGNAL PROCESSOR: A meeting was held with the Quality Control Manager from IBM, Owego, New York and Astrionics Division personnel to resolve the remaining points of disagreement in connection with NPC 200-2. The agreements reached were forwarded to Procurements and Contracts Office for inclusion in the contract as necessary.

8. S-IV STAGE: As of July 1, the Air Force at DAC has been authorized eight additional spaces for quality control personnel.

B 7-9

NOTES 7/9/62 Helmburg

Douglas Aircraft Company (DAC)

1. S-IV COLD FLOW TEST PROGRAM AT DAC:

Many difficulties have been encountered at DAC on both the battleship stage and the facility. Following are conclusions which have been made:

a. They are not ready to hot fire. ✓

b. This experience should have taken some of the "cockiness" (self-assurance) out of their approach. ✓

DAC is due in Tuesday, 7/10/62, with answers. ✓

2. CENTAUR:

Inputs regarding this program have been made to Ad Hoc Evaluation Team. Documentation is being prepared. ✓

3. SA-T4:

Full duration firing scheduled 7/12/62 (Thursday). The primary test objectives are to determine the prototype SA-5 GOX control valve operational characteristics and required GOX flowrate for tank pressurization without venting. ✓

4. MODEL STUDIES:

The VLF-39 1:58-scale model deflector test facility (C-5) has been completed and hot firing checkout tests are underway. ✓

Functional tests were conducted on SA-5 prototype GOX control valve to determine its dependability prior to its utilization in booster tests at Static Test Tower. The valve regulated satisfactorily and a safety device incorporated to prevent overpressurizing the proposed booster GOX system (in case of malfunction of the control valve) was demonstrated to be effective. ✓

B 7-9

NOTES 7-9-62 HOELZER

Negative report.

NOTES 7-9-62 HUETER B 7-9

1. CENTAUR:

a. Vehicle F-2: due to continued shortages and problems, this vehicle has slipped approximately 14 days off the GD/A schedule. Additional impact may result from lack of DX priority for obtaining flight instrumentation for the weather shield. Assistance from Headquarters has been requested for the DX priority to preclude further delays on this vehicle. ✓

b. Guidance: as a result of previous discussions with Minneapolis-Honeywell (M-H) personnel on the status of the Centaur guidance system development and improvements, it is understood that they are preparing a proposal relative to more improvements in the system. There is a meeting between this office, Astrionics Div, and M-H personnel tentatively set for July 10 to discuss the proposal. ✓

c. General: it is planned to discuss the directions from Headquarters at the Centaur Management Meeting on July 12-13. Representatives from the MSFC Divisions have been invited to participate. ✓

2. AGENA:

a. Mariner R-1 Launch: prelaunch preparations and checkout of the Atlas and Agena stages for the Mariner R-1 launch are progressing satisfactorily. The J-FACT was completed on July 9. During the J-FACT some problems were encountered. The Atlas azusa was noisy and the vernier engines were out in roll due to a problem with the programmer. The Agena telemeter was turned off at an unpredicted time by the D-timer. These problems are being investigated to determine the cause and possible impact. (spell out) ✓

b. GD/A Labor Situation: the possible walkout of machinists and electrical workers is expected on July 23 unless an agreement is reached prior to this date. If the walkout occurs, it would affect operations at the San Diego plant and at AMR. ✓

* 4cm 7-9-62

B 7-9

NOTES 7-9-62 Koelle

1. FPO 1962 STUDY FUNDS

A brief run down as to how our '62 funds were spent (very profitably we think) is as follows:

Of some 2.35 million dollars authorized for expenditure by our office we have committed and obligated some 2.34 million.

FPO manages 21 contracts, some with several task assignments, which involve 10 contractors.

Lockheed is our major contractor having obtained six study contracts for some $560,000. Martin, Boeing, GD/A and NAA, in that order, are our other principal contractors with contracts totaling from $250,000 - $350,000 each.

A further break out of our expenditures, according to our organizational elements, is as follows:

Operations and Cost Analysis	135
Launch Vehicles	1139
Propulsion	0
Astrionics	0
Earth-Orbit Systems	150
Earth-Lunar Systems	475
Earth-Planetary Systems	414

Additional funds will be spent by this office for NOVA system studies in the order of $2.3 million.

At this time no information is available as to how much money will be available for this fiscal year.

B 7-9

NOTES 7-9-62 KUERS

ok
gcm
7-9

*1. Hydrostatic Test Facility: (a) RFQ's have been prepared by MSFC P&C for this facility. Opening of bids has been scheduled to take place on August 7. (b) The available money is sufficient to go ahead on the construction of the basic building. Funds are short, however, by approximately $650,000 for platforms, cleaning equipment, etc., which are a part of this facility. $275,000 of this shortage can be made available from MSFC funds, subject to approval by Washington, and $375,000 additional money from Washington is required. Request for approval is being handcarried to Washington today. ✓

2. C-1, SA-5: Clustering of this vehicle has been started. The assembly shop is working two shifts to maintain the schedule. However, late deliveries of components from industry might affect completion date of October 22. ✓

NOTES 7-9-62, Lange

Pre 2

B 7-8

1. C-1

S-I - SA-3 - Post static checkout proceeding on schedule.
SA-4 - Post static checkout in process, anticipated delivery to static test stand 7-30-62.
SA-5 - Mating 105" container to tail assembly started 7-6-62. Forecast delivery to M-QUAL between 11-5 to 12-62.
SA-D5 - Tail section fabrication in process. Start of assembly is forecast for 8

* 9cm 7-9

S-IV - Battleship Test Program - After 3 abortive attempts at a LOX chilldown test, it was decided to review hardware and systems qualification at MSFC on 7-10/11-62.

Dynamics Vehicle - The first heat shield was successfully bonded this week.

All-Systems Vehicle - The common bulkhead was successfully welded to aft bulkhead of LOX tank.

SA-5 - During bonding operation in the autoclave the common bulkhead experienced a series of wrinkles; however, this was accepted by DAC Quality Control tolerance.

SA-6 - Attach angle on aft dome of common dome is out of angular tolerance. If rework is successful, bulkup for bonding of aft common dome will begin next week. ?

Hydrostatic Vehicle - Proof test of LN_2 tank is scheduled 7-11-62.

2. C-5

S-IC - Boeing has submitted cost proposal for the 90-day extension to the Contracting Officer on 7-2-62 and is proceeding to develop a final contract cost proposal. Establishment of firm proposal date is pending further clarification of work statement and receipt of a RFQ.

M-SAT has supplied divisions with guidelines for future MSFC/Boeing efforts based on basic policies established by M-DIR on 6-4-62 and reaffirmed in the 6-18-62 Review Meeting.

* 9cm 7-9

M-SAT is preparing a review of S-IC activities with Boeing for discussion with Mr. Dixon, HQ's, possibly during latter part of week of 7-9-62. No firm date for Mr. Dixon's arrival at MSFC has been established yet.

To review the Boeing proposal for the long term R&D contract an S-IC Task Team has been established.

Several meetings were held to establish a "Make or Buy" Plan for the Boeing S-IC contract. To expedite acceptance by MSFC divisions, Boeing will delete reference to proposed Boeing fabrication of hardware for MSFC built ground test stages and will prepare revised plan indicating only "Make or Buy" for stages built at Michoud. O.K.

* * *

S-II - Government pre-negotiations were held at WOO last week. Negotiations with NAA will commence 7-9-62 and continue through 7-20-62.

NAA unofficially informed WOO that due to errors in 5-21-62 cost proposal there would be an addition of $5,442,344 to make the total $363,312,995.

NAA will make presentation on 7-9-62 at MSFC, on the battleship test program at Santa Susana. The presentation will be made to Mr. Ackerman, AP, on 7-11-62 to obtain waiver for longer than 40 seconds firings.

NOTES, 7-9-62, MAUS

B 7-9

1. NASA LONG RANGE PLAN - We have been informed by OMSF (Program Review and Resources Management Office) that Mr. Hyatt's office will furnish the guidelines, assumptions, and procedures for the 1963 Long Range Plan, to the program offices on July 10. OMSF expects to add their assumptions, schedules, etc., and furnish to MSFC by July 16. Our input in the OMSF area is to be submitted to OMSF by August 15 to enable OMSF submission to Mr. Hyatt's office by Sept. 1. Jack Waite is M-CP Project Engineer for this activity. ✓

2. MSFC OPERATING PLANS FOR OART AND OTDA ACTIVITIES- In cooperation with Research Projects Division, we have made a joint comparison of the Office of Tracking and Data Acquisition Operating Plan with the Office of Advanced Research and Technology plan. Because of uncertainty by headquarters as to the mission pf these offices, we have submitted a number of tasks to both offices. We pointed out in the letter of transmittal that the duplication exists, and suggested that OTDA meet with OART and decide which tasks they desire to be accomplished and which office will fund each task. ✓

3. PROJECT ALPHA - We are coordinating with other offices and divisions to obtain definitions of the lunar logistic transportation system, such as: braking and landing modules, payloads and missions, schedules and milestones, and assumptions. These definitions will be used for estimating manpower requirements and resources planning for project ALPHA. ✓

4. PROPELLANTS MANAGEMENT - The liquid hydrogen plant operated by Air Products at West Palm Beach was to shutdown on July 7 for 8 days, for repair of a leak in a line in the "cold box." The 330,000 gallons in storage at P&W and Air Products is expected to provide for P&W tests during this shutdown. ✓

5. PERT - Representatives of our PERT office met June 26-27, with LOD to review PERT facility applications at AMR and discuss relationships between LOC and MSFC. It was generally agreed that LOC will furnish input to MSFC networks in the same way as planned for contractors. We are making arrangements for a condensed PERT training program for LOC personnel at Cape Canaveral. ✓

B 7-9

NOTES MRAZEK 7-9-62

1. RIFT: Lockheed Georgia Nuclear Laboratory, owned by the Air Force and proposed by Lockheed to support the RIFT Project, has been released to the GSA for disposal. It has been offered to Headquarters, NASA. MSFC would like to have it for the RIFT radiation effects program.

First Lockheed Missiles and Space Company package on use of Moffett Naval Air Station for RIFT manufacturing now under evaluation. Complete package expected within the week.

2. S-IV: Three attempts were made to conduct a LOX coldflow on the six-engine battleship configuration. All three attempts were aborted. Failures in the control helium supply system and the diffuser/ejector steam system caused all three aborts.

3. BOEING PERSONNEL: Onboard as of 7-6-62: 323.

4. TRAVEL STATUS: We are practically out of travel funds for the month of July. The following is a breakdown of requested and approved TDY as of today versus an allotment of $26,000 for the whole month of July.

	Submitted to Date	Approved
Engine Programs Approx.	$ 8000	$ 7000
Stages & Technologies	7000	5000
RIFT	2000	2000
PIO and Recruitment	700	700
Training	8500	6500
Totals	$26,200	$21,200

This leaves a balance of $4,800 for the rest of July. The reasons for this picture are:

a. We postponed many TDY trips from June to July due to fund limitations and cut out June training.

b. Most training courses fall into the months of July and August.

c. With more contracts in the engine and stage field the amount of travel increases.

Harry Q. This busts badly in view of all our Centaurs, S-IV, S II problems. Any suggestions? B

5. CENTAUR: The workload in the Centaur program has increased in this Division far beyond an equitable allocation of personnel spaces by L&M Office. Out of 100 spaces distributed by L&M in April & May, P&VE obtained only 4. Breakdown of spaces distributed: AERO - 19; ASTR - 24; LOD - 18; L&M - 24; COMP - 4; P&VE - 4; TEST - 4; P&C - 3;

Previous space allocations for AGENA and CENTAUR to this Division were as follows:

March 1961	13 Spaces
June 1961	2 Spaces
Total May-December 1961	15 Spaces Allocated & Used
January 8, 1962	10 Spaces Allocated
May 21, 1962	4 Spaces Not yet Used
Total thru May 1962	29 Spaces Allocated

H. Hueter Any suggestions? B

Below is the average of equivalent manpower worked in both projects:

July - December 1961 equivalent 30 men

January - May 1962 equivalent 24 men

It really looks like that P&VE has to cut down Centaur and Agena work.

We have additional Brown and Chrysler personnel working on both projects. These personnel (numbering approximately 25) are not accounted for in our funding and provide substantial support to these programs.

Please omit
GR
7-7-62

B 7-9

NOTES 7-9-62 [redacted] RUDOLPH

1. Interfaces, Saturn C-5/Apollo:

My office is beginning to look at interfaces between Saturn C-5 and Apollo, specifically for LOR mode. Our first effort will be the preparation of a simplified electrical schematic which will accentuate electrical interfaces. The prime objective is to determine electrical interfaces which require immediate attention. We will contact some of your people for information and support.

B 7-9

NOTES 7-9-62 Stuhlinger (Heller)

1. RESEARCH INSTITUTE: The University of Alabama proposal for Research Institute funding has been re-written to consider Headquarters' advice and criticism. After review by Dr. Shelton, the revised proposal (in rough-draft form) was mailed to Washington on July 7, where it will be reviewed by Dr. McCall and others. ✓

2. SUPPORTING RESEARCH: A total of $10,805,634 was obligated before July 1, 1962, under the FY-1962 LVT Program, including the requirements of the Future Projects Office. This represents about 98% of the total program originally authorized by Headquarters. ✓

(Spell out)

RPD prepared a revised FY-1963 submission to OART, including task area descriptions and task titles, in response to the OART guidelines of June 8 for the following OART Program Areas:

Space Vehicle Systems	(Mr. Ames)
Electronic Systems	(Dr. Kelley)
Space Power Technology	(Mr. Sloop)
Research	(Dr. Kurzweg)

(The FY-1963 requirements for the Chemical Propulsion Program and the Nuclear Rocket Program are being assembled by P&VE Division. Future Projects Office is handling the Biotechnology Program.) This submission constituted the second iteration of the program planning activity for our FY-1963 OART research programs. These budget planning exercises are quite time consuming; however, we will probably have to go through one or two more cycles before the OART-MSFC FY-1963 budget becomes firm. ✓

NOTES WEIDNER 7-9-62 B 7-9

1. H-1 PROGRAM: The first RVT (Reliability Verification Test) engine from Neosho has been subjected to two (2) hot firings for a total of 124 seconds. (Some small tube-splits developed; however, a duration firing will be made prior to removal and repair.) ✓

2. RL-10 PROGRAM: A contract including work statement has been prepared by MSFC for variable thrust development work by Pratt and Whitney Aircraft Company on the RL-10 engine. The subject contract is under discussion by OMSF which may result in further delay in the approval of variable thrust work to be done by Pratt and Whitney Aircraft Company.

Preliminary Flight Rating Test (PFRT) of the RL10A-3 engine has been completed including the malfunction test and a vibration test on engine FX148.

The first Pratt and Whitney Aircraft engine manufactured at East Hartford (S/N 1801) is in post green inspection. ✓

3. F-1 PROGRAM: More details on the incident involving Engine #008: a rough combustion condition occurred at approximately 105 seconds of a 150 second scheduled run on Thursday night, 6-28-62. The rough combustion cutoff device initiated shut-down and the attendant high amplitude fuel pressure oscillations caused the fuel valves to rupture. The resulting LOX rich condition inside the engine and the fuel rich fire external to the engine caused approximately a 65% loss of the engine. However, the test stand damage was minor. The rough combustion or instability was of a 600 cycle frequency suggesting a first tangential mode.

We are in the process of establishing an Ad Hoc Group to review Rocketdyne's injector combustion stability design approach. ✓

4. M-1 PROGRAM: The remainder of the FY-62 supplemental funding for the M-1 Program has been received and it is planned to obligate this at once under the current M-1 letter contracts.

FY-63 obligational authority to cover the currently projected M-1 expenditures to 9-1-62 has been received. This is one month short of the coverage requested 9-30-62 at the Budgetary Review in Washington, 6-29-62. C of F funds were not included and MSFC is currently looking at methods of covering severable facilities until FY-63 C of F funds become available. ✓

5. J-2 PROGRAM: A letter contract for deliverable J-2 engines was presented to Rocketdyne on 6-25-62 and became official on 6-30-62 when Rocketdyne signed the contract. This contract will cover a 90 day period for the amount of $1.7 million.

A mainstage test of engine number 002 was run for a duration of 11 seconds on vertical test stand 3-B (sea level operation). Investigation following the run revealed five (5) minor tube-splits in the combustion chamber which were attributed to hand brazing of the chamber. It will be possible to re-run the engine without repairing. When checking the facilities after this run minor damage was discovered in the form of a cracked dummy gimbal block and a cracked dummy actuator clevis. Cause of damage has not yet been determined. ✓

July 16, 1962

B 7-20

NOTES 7-16-62 GORMAN

Negative

B 7/17

NOTES 7/16/62 CONSTAN

BRIEFINGS FOR SERVICES TO BE FURNISHED BY THE CITY OF NEW ORLEANS

1. The New Orleans Public Service (Suppliers of Gas and Electricity for New Orleans) was briefed relative to projected requirements for gas and electricity at the Michoud facility. The purpose of the briefing was to permit New Orleans Public Service to evaluate their facilities in the vicinity of the Michoud plant to insure that adequate gas and electricity would be available when needed (informally New Orleans Public Service stated that it appeared that their present facilities are sufficient). It is planned to give the New Orleans Public Service a formal letter outlining the Michoud requirements for gas and electricity within the next two weeks. ✓

2. The New Orleans Water and Sewage Board was briefed relative to the projected water and sewage requirements for the Michoud facility. It appears that the projected sewage can easily be handled by existing facilities. The projected water requirements will necessitate an additional 12" water line to the Michoud facility. This 12" water line will be attached to an existing water main located along the old Gentilly highway which is the road running in front of the plant. ✓

3. It is planned to brief the New Orleans Levee Board, the State Board of Health and the State Stream Pollution Board relative to the disposal of industrial waste and the plan for storm drainage system for Michoud within the next two weeks. ✓

Mr. Constan: I believe this whole item could have been condensed as follows: City officials are being briefed on the needs for Michoud in the electricity, water, sewage disposal fields, etc. All facilities are adequate except that a 12" additional water line will have to be installed. ✓

ACM
7-16

B 7/17

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ACM
7-16

NOTES 7-16-62 DEBUS

B 7/17

No NOTES received this date.

B

7-20

NOTES 7-18-62 DEBUS

1. CTL: Jupiter CTL 111 preparation is progressing on schedule. Turnover is presently planned for July 26.

2. Interim Offset UDOP: An informative memorandum for distribution will be issued this month concerning the interim offset UDOP system. It will be followed by a technical report which is being prepared by Byrne of the RF Systems Development Section.

3. Saturn C-5 Site Plan: Site and zoning plans for Launch Complex 39 have been approved in-house for presentation to the Range.

4. Copy of notes to Holmes attached.

Received 7-18-62
9 00 am

Bernie
See my note behind
Grau's Notes. Bring
to Hueter's and Grau's
attention, please.
B 8/4

NOTES 7-17-62 DEBUS B 7-20

1. Meeting with General Davis: On 16 July I had a meeting with General Davis, AMR. He had suggested that we jointly arrive at a position regarding the problems delineated in the 72-page DOD document. No details were discussed in view of guidelines obtained through Holcomb; i.e., that in case NASA/DOD cannot resolve at the highest level, then negotiations would be started as directed at our level. ✓

2. Atlas Agena B:

a. MR-I prelaunch is still on schedule.

b. AMR has refused to grant firm siting of the new Atlas Agena pad until supporting launch schedules are furnished. Will update existing 98-A's to accomplish this. ✓

3. ARINC Study: A review of the SA-2 ARINC Reliability study report was made. No unresolved areas exist. The final report for Hqs. is being prepared. LVOD and LOC will have an opportunity to see the final report before release to NASA Hqs. and further distribution. Plans for the SA-3 ARINC participation were also reviewed. ✓

4. Work Stoppage - Complex 37: 15 plumbers and pipefitters employed by Pacific Automation Products (sub contractor to Spellman Engineering) went off the job July 11. The reason for leaving was the resignation of a supervisor on July 10. The parties involved met on July 11 and the problem was satisfactorily resolved. The union promised that the men would be back to work on July 12 and by July 13 at the latest. 5 men reported on July 12. The company asked for 12 men instead of the 15 that had left the job. Problem resolved. Work normal as of this date. ✓

5. Mariner: Preparations are being made to track the Mariner R1 with the UDOP system. The purpose of tracking this vehicle is to further evaluate the performance of the UDOP system, in its present state, for use in deep space probes. ✓

6. Liquid Hydrogen Servicing System: On June 17, a contract was issued to Linde Co., Tonawanda, N. Y. for design modification, fabrication, installation and checkout of the liquid hydrogen servicing system for Launch Complex 34. The design modification will adapt the liquid hydrogen servicing system of Launch Complex 37B to Launch Complex 34. Contract cost is $1,132,000. All work is scheduled to be completed by Nov. 1, 1963. ✓

7. Real Estate Acquisition: As of July 6, 1962, 1,973 tracts consisting of 24,490 acres have been acquired at a cost of $23,233,394. ✓

These NOTES were not received until 3:30 P.M. 7/9/62 - too late for submission. JF

NOTES 7-9-62 DEBUS B 7/17

1. Continuing Appropriation Authority: Teletype authority has been received to continue operations during month of July 1962. Allotment of $2,304,000.00 including travel limitation of $50,000.00 received. Personnel ceiling 560 received. Sub-allotments from MSFC have been received for pay and travel of LVOD personnel at Cape; sub-allotments have been issued from LOC to MSFC for pay and travel of LOC personnel at Huntsville. ✓

2. C-39 Technical Report: Work is under way on the preparation of the C-39 Technical Report which I discussed at the Management Council meeting. A copy of this will be forwarded as soon as available. Holmes has just sent me a letter authorizing LOC to proceed with the crawler type transporter, the arming tower and the "closed" vertical assembly building. ✓

3. Notes to Holmes attached. ✓

NOTES 7-9-62 DEBUS

B 7/17

1. ARINC SA-2 Report and Proposed ARINC SA-3 Study: A meeting was held 5 July with ARINC and all LOC elements concerned to discuss details of the reliability studies with that company. The SA-2 report was discussed in detail and recommendations made for changes which will be incorporated in the final report. The proposed SA-3 study is essentially an extension of the SA-2 study into testing and checkout activities not presently being studied by the ARINC Research Corp. A thorough evaluation will be made in the telemetering, tracking, RF, and measuring equipment areas for the SA-3. This study will be performed under MSFC Saturn Systems Office technical supervision of the NASA Hq. contract. ✓

2. Launch Complex 38: Siting approval has been granted by the Range for Atlas-Agena B Launch Complex consisting of blockhouse and single launch pad. (Location of this complex will be at the tip of the Cape.) ✓

3. Residency Audit Office: Mr. Raymond Einhorn, Chief, NASA Hq. Audit Division, visited LOC to determine audit requirements preparatory to establishing a resident office. ✓

4. Relationships with Goddard Space Flight Center: Proposed memorandum of understanding of LOC service to be rendered to GSFC is under preparation. August 15, 1962 would be earliest date for assumption of pay of personnel. ✓

5. NASA/LOC Frequency Coordinator: Recent violations of entrance into the Range regarding frequencies requires that we restate our procedures. Blanchard is our NASA/LOC coordinator in this area and as such must feed into AMR (through NTSO) all frequency information including DELTA and MERCURY. To promote better understanding and relationships, we are sending him to Buckley's shop to meet with Mr. Price, NASA Hq. Frequency Coordinator. ✓

6. Wallops Island Station Research Project: Langley Research Center will begin, in Oct. 62, a program to obtain reentry data from a 5 stage Scout vehicle launched from Wallops and impacting on the AMR near Antigua. In discussions between NASA Hq. and DOD, it seems that Wallops is being given the status of a National Range; and, in the case of this program, a "lead range." On 3 July 62 the Project Manager from LRC and two Wallops representatives spent the day exchanging briefings with appropriate AFMTC personnel. The NTSO had assisted with preliminary briefings and with the setting up of meetings. Under the "lead range concept," direct contact between Wallops and AMR would be the normal procedure, with LOC elements assisting in exceptional cases as requested. ✓

NOTES - GEISSLER - 7-16-62 B 7-20

1. SPECTRUM OF TURBULENCE: The spectrum of turbulence for vertically rising vehicles was computed using the detailed wind data measured by the FPS-16 Radar/Spherical Balloon technique. An analysis of these data indicated that a profile is composed of random and non-random variations, which can be separated by employing a suitable filter function. Random motions occur over wavelengths of less than about 400 meters; non-random for longer wavelengths. Turbulence is defined as the random portion of the profile. Preliminary results show that the spectrum of turbulence is influenced more by atmospheric stability than by mean wind speed, and that turbulent velocities in the troposphere (below about 13 km) contain considerably more energy than in the stratosphere (above 13 km).

2. PROPOSAL FOR AMR CALCULATION OF RANGE PLANNING TRAJECTORIES: A meeting was held at AMR to discuss the feasibility of the JPL proposal for range generation of certain trajectories to be used for range-planning. This proposal is documented in JPL EPD 89. It is proposed that the range be furnished with conic approximations of trajectories from injection to target and that after examination the range determine and generate those trajectories required for instrumentation planning. The subject trajectories are long lead time items and do not infringe on the flight trajectories generated by the range user. It is expected that this proposal be accepted or rejected by October 1, 1962.

3. SATURN OPERATIONAL FLIGHT CONTROL: Drs. Simon and Steeg of RCA discussed with Dr. Speer the "Saturn Operational Flight Control" study contract. Present shortcomings of the study were recognized. Dr. Simon indicated that an RCA management meeting to discuss corrective steps to be taken was planned.

4. C-1 and C-5 CROSS FLOW DRAG REACTIONS: The cross flow drag reactions due to surface winds have been re-evaluated for the on-pad and lift-off cases. A reduction of steady state forces and bending loads of 25 to 40% will result on both Block I and C-5 Saturns reducing structural requirements at the base and the initial drift rates. A relative unknown is still the induced lateral oscillations due to vortex shedding. On the large vehicles, this vortex generation is apparently associated with the nose shape and is concentrated in the tip region. Structures personnel rightfully maintain a healthy safety margin for this unknown. The proposed on-pad measurements of SA-3 will be extremely beneficial in establishing the true values.

B 7-20

NOTES 7-16-62 GORMAN

Negative

NOTES 7-16-62 GRAU

B 7-20

1. SA-3 POST-STATIC CHECKOUT: A liquid level sensor prism in the 105" Lox tank is broken and the cause has not been determined. Investigation is being conducted.

2. SA-4 ENGINE PROBLEM: Erratic torque of turbine R088R of Engine H-1058, position 8 has necessitated removal for a second time. This problem was previously mentioned in NOTES 7-2-62 GRAU. This turbine was disassembled, re-assembled and hot fired prior to the last removal.

3. CENTAUR: Separate Project Organizations are being established at GD/A for the Atlas Space Booster, the Atlas Weapon Systems, and the Electronics Program. Quality Control for these three new groups is to be unified under separate management at the Astronautics Division Level (Mr. Phil Harr). Consideration is being given to removal of the Centaur Quality Control Function from the Centaur Project Organization and placing it with the new organization under Phil Harr. Since MSFC quality control methods and procedures for Centaur are more stringent than requirements of other GD/A customers, this move should be strongly resisted. (ACTION REQUIRED in your discussion with Mr. Dempsey this week, back-up information attached.)

4. QUALITY ASSURANCE REQUIREMENTS FOR S-IV STAGE: We were informed this past week by a DAC Quality Control Representative that the NPC 200-2 has not been priced and consequently not added to the S-IV contract. DAC plans to determine cost for addition of NPC 200-2 to S-IVB contract first and then concentrate on the S-IV.

5. SYSTEMS CHECKOUT AND PREFLIGHT TESTING WORKING GROUP: At the request of this working group, the SSO issued a directive which clarifies the MSFC position on whether component test stations shall be provided to field installations such as Sacramento, MTF and AMR. Although this directive has not been received yet, we understand that SSO took further action to define that testing of components shall not be automated. Quality Assurance Division disagrees and feels that each case should be judged individually.

6. AEROJET-GENERAL CORPORATION QUALITY CONTROL PROGRAM: Completed review of Aerojet-General Corporation Quality Control Program at the Aerojet-General Corporation Sacramento facility. The review consisted of a series of presentations by Aerojet-General personnel outlining methods of accomplishing various functions related to the Quality Control operations, in order that the determination could be made as to applicability on the M-1 Engine Program. Some individual areas were visited to see how functions presented were actually carried out. General agreement was reached although several significant changes in the Aerojet-General Corporation system are necessary; primarily in the areas of Material Review Board, Design Review, sub-contractor quality control and material and part identification. Aerojet-General Corporation will resubmit their Quality Program Plan as soon as possible.

Mr. Grau

: Centaur Project Manager : July 10, 1962

: Chief, Quality Assurance & Reliability, Centaur Project Office

: Proposed Quality Control Organizational Changes at GD/A

1. During my last visit (July 3, 1962) to GD/A, Mr. Grant Hansen, Vice-President and Centaur Project Director, advised me of the following forthcoming GD/A organizational changes. Separate project organizations are being established for the Atlas Space Booster, Atlas Weapon System, and Electronics programs. These organizations will be similar to the present Centaur project organization. Any new programs of a similar scope and size undertaken by GD/A would also be projectized in this manner.

2. The present Centaur project group under Mr. Hansen contains the quality control function for Centaur. As such the quality control effort is directly project oriented and responsive to Centaur quality requirements. In the three new project groups and also in any future project groups that may be established, quality control functions will not be oriented to the individual project organization, but will be set up as an institute type function with separate management reporting to Mr. Phil Harr at the Astronautics Division level.

3. Pressures are being exerted, and consideration is being given to extracting the Centaur quality function from the Centaur Project organization and including it in the Astronautics Division quality control group. This change would be a return to the same organization for quality control which existed before the Centaur Project group was formed. Mr. Hansen is opposed to this change because he is convinced that its effects would be detrimental to the Centaur program. It is the position of this office that Mr. Hansen should have the united support of MSFC to prevent such a change. The Quality Assurance Division is in agreement with this office in the opinion that the proposed GD/A quality control organizational change would be a definite handicap to the Centaur program.

D. Grau, Director discussed this matter with Jim Dempsey on July 18 and told him that we were solidly opposed to this scheme. He said no decision had been made yet and he'd be willing to "consider" any opposition. WHAT HAS HE DONE, meanwhile? B814

Subject: Proposed Quality Control Organizational Changes at GD/A

July 10, 1962

4. MSFC Quality requirements and quality control procedures for Centaur are more stringent and severe than the quality requirements imposed by other customers of GD/A. These requirements, together with the methods and procedures to implement them, have been developed through years of combined MSFC/ABMA experience. The present Centaur quality control organization under Mr. Hansen has been much more responsive and cooperative in implementing these requirements than the previous organization. It should be noted that if, in the future, the existing arrangement should become unsatisfactory to MSFC, the proposed change could then be considered.

5. Mr. Hansen mentioned that Mr. Dempsey, the President of GD/A, will be making a trip to MSFC and LOC around the 18th day of July. He will no doubt discuss the quality control change for Centaur with Drs. von Braun and Debus at that time. Mr. Hansen is of the opinion that if Drs. von Braun and Debus do not strongly object to the proposed QC change that it will be effected on Centaur also. This office strongly recommends that the present quality control organization and management for Centaur not be changed and that you take such action which you may deem appropriate in support of this position. It hardly seems desirable to revert to the old organizational set-up after only six months of activity under the Centaur group especially when the quality activities on Centaur have shown such considerable improvement during that period.

page 1
B

Earl C. Hoffer

Copies to:
M-L&M-DIR Mr. Hueter
M-L&M-CP Mr. Nelson
M-L&M-CGD Mr. Rovenger
M-L&M-CP Files
M-L&M-CQ Files

NOTES - HAEUSSERMANN, 7/16/62 B 7-20

1. VISIT TO IBM OWEGO: Purpose of this visit was to investigate IBM by ASTR Branches (Instrumentation, Gyro, and Flight Dynamics) which were not too familiar with the company's facilities and capabilities. Favorable impressions were made and highly competent personnel are available in areas which Astrionics Division has an interest. Mr. Cooper, General Manager of Owego, stated that IBM staffing for any MSFC program would be done with excellent personnel. ✓✓

As a result of your visit with Mr. Holmes, ASTR and SSO will prepare material for presentation to LVP (Mr. Canright). Specific details will follow as soon as evolved. ✓

To Holmes, through Canright

JCM
7-16

Holmes & Canright
are sold on the IBM plan.
B 8/4

NOTES 7-16-62 Helmburg

B 7-20

1. SA-14: Two attempts to conduct a full duration static firing on SA-14 have been terminated prematurely due to instrumentation failures. One attempt on 7-12-62 resulted in cut-off after 12 sec. due to a broken wire to the pressure pickup for the No. 1 bearing jet pressure on engine position No. 3. The run on 7-13-62 was terminated after 20.43 sec. due to failure of an on-stand connection to the fuel pump inlet pressure pick-up on engine position No. 8. The test is rescheduled for tomorrow, 7-17-62.* ✓

2. M.T.F.: (Ref. Notes 6-25-62 Helmburg) Preliminary presentation of proposed master site plan at MTF was made to Dr. Rees on 7-11-62 by the AE contractor, S&P, Inc. This presentation included plans for the first S-II stand to be an all-systems type stand targeted for activation by 1-1-65, provided funding authorization to permit start of design criteria is received at once. The final presentation of the site plans to you, 7-18-62, will include complete schedules for both the S-IC and S-II test complexes. ✓

K.H. Status? B

3. MARINE ACTIVITIES: (Ref. Notes 6-25-62 Helmburg) A survey was held last week for the purpose of preparing estimates and specifications for the reactivation of the vessels we have on "loan" from the Army. A detailed report on this equipment is being prepared. ✓

4. MODEL STUDIES: (Ref. Notes 7-2-62 Helmburg) VLF-34 deflector is narrower and lower than VLF-37. Design of VLF-34 was frozen and could not be modified in accordance with model test results. Also, VLF-34 was tested at simulated 165K level only, and a slight choking condition was noted. Therefore, if VLF-34 is to be modified for Block II vehicles, testing at simulated 188K level is recommended because of the 10% higher mass flow. VLF-37 model testing was performed at both levels, 165K and 188K, and resulted in a slightly wider and higher deflector. ✓

K.H. That kind of mod would be worked? B

5. VLF-37 GSE: The vehicle to ground system propellant coupling (LOX and fuel) for S-I stage was tested with liquid hydrogen to determine if possible to use for upper stages of C-5 vehicle. The couplings were disconnected and re-connected automatically. No difficulties were experienced.

The propellant connectors on swing arm No. 2 and the hydrogen vent line connector on swing arm No. 3 planned by Douglas for use on S-IV stage of SA-5 are unsatisfactory. The propellant connectors leak and the hydrogen vent line connector will not disconnect. ✓

6. S-IV Battleship Test Program at DAC: At meeting with DAC here, 7-10-62, it was agreed eight (8) items must be incorporated in test setup prior to Cold Flow Tests. DAC estimated these items could be taken care of and Cold Flow Tests could be started 7-19-62. If all goes well, hot firing planned for 7-27-62. Review Team will monitor tests. ✓

7. RL-10A Testing, MSFC: Engine No. 1713 was installed in test stand. Cold Flow Test planned tomorrow, 7-17-62. Hot firing planned Saturday, 7-21-62, barring unforeseen troubles. Hot firing will be postponed if Review Team goes to DAC this week. ✓

2 ATTACHMENTS: 1. Notes 6-25-62 Helmburg
2. Notes 7-2-62 Helmburg

*** A careful review of our redline values with the possibility of regrouping of our instrumentation is underway to minimize the possibility of cutoff because of faulty instrumentation. The blockhouse in the west area is provided with redundant control instrumentation.** ✓

B 7-20

NOTES 7-16-62 HOELZER

Negative report.

NOTES 7-16-62 HUETER

B 7-20

1. CENTAUR

a. Centaur Program

A Centaur Program Review Meeting was held at MSFC on July 12, 13, and 14. The revised development reflecting the NASA Headquarters redirection of the program was discussed. As a result of the detailed discussion of the development plan the Centaur Project Office is in the process of expediting contractual changes to reflect the redirection. An Ad Hoc evaluation meeting is scheduled today to discuss the Centaur Program.

b. Centaur Guidance

A major area of concern in the Centaur Program development is the guidance system. Minneapolis-Honeywell is tentatively planning to present to MSFC personnel on July 19, 1962 their revised thinking of the Centaur guidance system.

c. Vehicle F-2

The schedule for the delivery of Vehicle F-2 has been improved from the 14 days as reported last week to a slippage of 10 days at present. This improvement was accomplished by deferring certain tasks until after delivery of the vehicle from Sycamore Test Site.

The subcontractor need of a "DX" priority for delivery of the telemetry package no longer exists. Texas Instruments will deliver the package on schedule without the "DX" priority.

2. AGENA

a. Management Structure

NASA Headquarters has asked MSFC to review the management structure of the NASA Agena Program, taking into consideration the establishment of LOC at AMR and any other changes which will affect program operation, and prepare appropriate recommendations. John Stone, L&M Vehicles Office, is forming a group to conduct the study. This group will hold its initial meeting on July 19, 1962.

b. Mariner R

Mariner R checkout continues satisfactorily at AMR with only minor difficulties being encountered. The Agena vehicle will be moved to the pad for final mating on Tuesday and the spacecraft on Thursday. The first launch attempt will be Saturday, and if not completed, a further attempt will be made each day or as early as practical until launched. The window for Saturday is 3:44 to 5:38 am EST; Sunday 3:43 to 5:37 am EST; Monday 3:43 to 5:36 am EST and continuing a minute or so earlier each day.

3. GENERAL

a. Reference Mrazek Notes of 7-9-62

This office has been able to provide slightly less than 75% of the latest MSFC Divisions estimated personnel requirements (279-203) for support of Agena and Centaur. The P&VE Division have 80% of their estimated requirement (30-24). The personnel available within P&VE for Agena and Centaur work may not be adequate, but insofar as allocation of personnel space from this office is concerned they have their fair share.

B 7-20

NOTES 7-16-62 Koelle

1. SPACE STATION, PRELIMINARY DEVELOPMENT PLAN

We have proceeded with the draft of our proposed report to a point where we would like to make an informal presentation to you and/or the Board. We have heard that this subject will be on the agenda of the next Council Meeting. There are two problems to be discussed:

a. If the simple nonrotating station is favored as the cheaper and simpler solution, we seem to have an option to make a bid for the basic structure of the station. This can be built at Huntsville with S-1C tooling. It is essentially a glorified first stage Lox tank.

b. If this project comes early, we are facing a situation where our present C-1B launch facilities would be saturated by the requirements of this project along (12 firings per year). This will be on top of possible planetary missions.

2. NOVA

NASA Headquarters (Mr. Webb, Dr. Seamans and Mr. Holmes) approved the recommendations of the NOVA Source Evaluation Board on July 10th and it was announced on Friday, July 13, that GD/A and Martin had been selected for contract negotiation. The original NOVA Management Team has been reactivated and the following schedule is planned:

20 July	Contractors to meet at MSFC to
	a. Review work since proposals were submitted.
	b. Discuss in detail the new work statement.
30 July	Start contract negotiation.
15 Aug	Study Orientation Meeting at MSFC.
Late Nov	Mid-term Review.
Mid April	Study Final Presentation.

* gcm

B 7-20

NOTES 7-16-62 KUERS

1. C-5 Mock-Up Shelter: Following the approval of the C-5 Mock-Up building by NASA Headquarters, both program authority and funds were cited to P&C to provide for contracting. This will be a semi-permanent type structure.

Pertinent data: Size: 90' x 120' x 48' high
Total cost estimate: $145,000
Time schedule: Building occupancy - 15 to 20 weeks after award of contract, (According to unsolicited proposal of Butler Manufacturing Company) Contract to be awarded week of July 16-20, Completion date, based on above, November 9.

2. S-1C: Boeing has expressed the desire of establishing a training program for wage board personnel in our shops during our early manufacturing period. Although we don't need these people to accomplish our work, I think this is a good idea. In general I can state that our relations with Boeing are excellent and I believe that the S-1C mode of utilizing the experience of a big company and our experience jointly for stage development is a very good approach.

Notes 7-16-62, Lange

B 7-20

1. C-1: S-I

SA-3 - Shipment to AMR is scheduled for 8-24-62.

SA-4 - Delivery to static test stand is anticipated 7-30-62. Final modification of upper stages depends on 8-1-62 meeting, where the missions will be discussed.

SA-5 - Forecast transfer to M-QUAL for pre-static checkout is 11-5-62.

SA-D5 - Tail section and spider beam fabrication in process. Start of assembly is forecast 8-6-62.

gcm* Michoud - First Quarterly Review of S-I Program will be held on 7/23-25/62. Definitive Chrysler contract is expected to be forwarded to HQ's for review during week of 7-16-62.

S-IV - S-IV Technical Review Mtg. was completed 7-11-62.

gcm* Battleship Testing - LOX chilldown is scheduled for 7-20-62, with hot firing about one week later.

Dynamic Vehicle - insulation expected to be complete 7-20-62.

All System Vehicle - LOX Tank/LH_2 tank mating and welding should be completed 7-23-62.

Hydrostatic Vehicle - cryogenic proof test of LH_2 tank is scheduled for 7-15, but may be postponed since P&VE is asking DAC for a 27 psi tank pressure.

SA-5 Common Bulkhead ready for facing operations on attach angles. Aft skirt and interstage are in the proof test fixture. Alignment difficulties on forward loading ring have delayed test. New date for test is not available yet.

SA-6 Stage - Aft common bulkhead has been fitted to bonding tool.

DAC and Unions are still negotiating. If no contract solution can be reached, strike will be effective 7-23-62.

gcm* 2. C-5: S-IC - Presentation to Mr. Dixon to review activities with Boeing is scheduled 7-19-62 at HQs.

First F-1 engine firing with a 16 to 1 area ratio thrust chamber was conducted for 2.8 sec. duration on 7-11-62 at Edwards Base. Combustion instability continues to be engine development problem.

Boeing proposal to change assembly mode for propellant tanks by utilizing larger skin segments resulting in 2,000 lbs. weight savings is being evaluated by P&VE and ME as to weight savings, tooling and schedule problems.

Revised Make or Buy plan was released by Boeing and distributed to divisions for comments. Procedures for joint Boeing/MSFC source selection for buy items and for subsequent Boeing or MSFC procurement actions will be published.

S-II - Contract negotiations with NAA are continuing.

Explosive Hazards - Informal reaction of Mr. Ackerman (AF) to NAA presented battleship program was favorable. Indications are that an easement on adjacent private property has to be obtained for the 25% duration all systems vehicle test.

S-IVB - Negotiations with DAC indicate that final stage hardware contract will be at HQ's for approval on or about 7-23-62.

gcm* Approval for emergency authorization request to proceed with DAC static test facilities has not been granted yet.

System - Analysis of impact on program by tentative $333M FY-63 funding ceiling is being conducted.

Feasibility of a parabolic re-entry test with the Apollo command module on a two stage C-5 is being investigated. Huh! Accelerations!! B

Preparation of a launch vehicle system integration (interface) PERT network has been initiated.

B 8-4

NOTES, 7-16-62, MAUS

1. QUARTERLY ACTIVITIES REPORT - We would like to call your attention to our first Quarterly Progress Report. Since the sole purpose of our organization is to assist you and the deputy directors, we are anxious to receive your comments so that we may know if we are doing the things we should be doing. ✓

2. CONSOLIDATED PLANNING AND BUDGETING - We have initiated action to consolidate the preparation of FY 63 Program Operating Plan, FY 64 Budget, and the revised consolidated scheduling package, into one exercise. The due date is August 15, but the headquarters program assumptions due July 15 are not expected until early August. This is too late for orderly preparation of the above documents. For this reason we are establishing our own MSFC assumptions. We shall discuss these assumptions with OMSF on July 18-19. Based on this review MSFC will prepare the documents required. This procedure may compel us to make some later adjustments after the official guidelines have been issued by OMSF. ✓ O.K.

3. GULF OPERATIONS STUDY - We have been requested by Dr. Rees and Mr. Gorman to study in detail alternate approaches for the organization of MTF, and its relations to other Gulf activities and MSFC. Mr. Marion Kent has been assigned to Central Planning Office to conduct this effort. Target date: August 1. ✓

4. MANAGEMENT COUNCIL MEETINGS - We have been requested by Dr. McCall to take over the coordination of the agenda of and preparation of the material for OMSF Management Council Meetings. Mr. Ray Kline has been appointed to handle this matter. ✓

5. LONG RANGE PLAN - A memorandum has been received from Mr. Hyatt's office establishing a schedule and broad guidelines for development of the 1963 Long Range Plan. We are drafting a plan for preparation of the MSFC input and a letter for your signature to Mr. Hyatt appointing MSFC contacts. This effort has been coordinated with M-FPO and M-RP. ✓

NOTES MRAZEK 7-16-62 B 8-4

1. BOEING PERSONNEL: Number onboard as of 7-12-62: 329. ✓

2. F-1 ENGINE GIMBAL SYSTEM: Thompson Ramo Wooldridge was selected to build the prototype turbine and pump power unit for the 4,000 psi F-1 engine gimbal system. ✓ W.M. This is strictly true alternate R&D approach since we decided to adopt the low pressure RP system. correct? B

3. RIFT: Mr. Finger has established an Engine-Interface Coordination Group to be chaired by Colonel Scott Fellows with membership from Space Nuclear Project Office-Cleveland, Aerojet-General, and Lockheed Missiles and Space Company.

Lockheed is going to give a presentation to the Nuclear Vehicle Projects Office, Manufacturing Engineering Division, Facilities Engineering Office, and Test Division on Tuesday, 7-17-62 on the Manufacturing Facilities at Moffett. A summary presentation by Dr. Roy Smelt will be given to Dr. von Braun at 3:00 p. m. ✓

* 4. S-II: Detailed discussions were held 7-10-62 between S&ID and MSFC on the S-II heat shield design. The base environment of the S-II will vary from approximately - 150°F at ignition to 2000 - 3000°F during powered flight. A joint program has been developed which will be accomplished initially at MSFC (due to the lack of environmental simulation equipment at S&ID), directed primarily to selecting curtain materials for the S-II stage. ✓

4cm

A joint meeting between S&ID and MSFC revealed the S-II common bulkhead design remains problematical. One design, satisfactory from the structural and thermal aspects, was determined to be impractical from the manufacturing viewpoint. Continued experimentation at S&ID is underway to develop an optimum design of a prototype bulkhead. This problem remains unsolved. ✓

5. The Air Force has expressed an interest to fly MSFC's ejectable and recoversble movie cameras to observe the stage separation of the Atlas and Titan II missiles. All pertinent information has been made available to them. ✓

6. The hydrsulic actuator study with Astrionics Division has been concluded. We are ready for a presentation to you. ✓

4cm * 7. There is increased interest for a C-I-B DYNASOAR configuration. Boeing is investigating again (See enclosed configuration). ✓

Enclosure: SATURN C-I-B DYNASOAR Configuration

B 7-20

NOTES 7-16-62 Rudolph

1. Performance Specification, Saturn C-5/Apollo:

Since a selection of mode has been made, Dr. Shea considers his major efforts should now be directed toward the establishment of a Performance Specification for Saturn C-5/Apollo. The objective is to establish clear cut performance parameters within which the centers will work.

My people will contact your people for inputs based on MSFC's past and current studies.

B 7-20

NOTES 7-16-62 Stuhlinger

1. MADKIN MOUNTAIN ANTENNA: See NOTES of 7-2-62, Attachment #1, for previous information on this item and a question by Dr. McCall. The Madkin Mountain Installation was offered to NASA by a letter from General Bigelow, Office, Chief of Ordnance, to Mr. Buckley, Director, Office of Tracking and Data Acquisition (OTDA). Mr. Buckley established the following Evaluation Group:

C. R. Morrison, Chairman (OTDA)
Robert Rapp (OTDA)
Walter Victor and Mr. Valencia (JPL)
Mr. Golden and Mr. Hartz (Goddard Space Flight Center)
Mr. Barr and Mr. Thompson (MSFC)

This group spent one day with Mr. Jim Fagan and Mr. Waite Todd of AOMC discussing and touring the installation. A number of problems were found to exist, which will be outlined in a separate memorandum to you, which have led the majority of the Evaluation Group to recommend that the offer of the dish be declined. Mr. Thompson was requested on June 12 by Mr. Morrison to submit any MSFC comments by June 16 on the proposed NASA reply to decline the dish. Mr. Hoberg and Mr. Barr were both out of town until today but will be contacted prior to the preparation of a reply for your concurrence. ✓

Attachment 1 - NOTES 7-2-62 Stuhlinger

B 7-20

NOTES WEIDNER 7-16-62

1. F-1 ENGINE: The first engine test with a nozzle skirt (expansion ratio 16/1), was held with engine #007 on 7-11-62 for a duration of 2.6 seconds. Preliminary inspection has disclosed wrinkling of the inner and outer shells, inward buckling of the inner shell and cracking at the attach points.

As a consequence of recent "rough combustion" difficulties, we have gathered an Ad Hoc group to meet today at MSFC. Subject: F-1 Injector. Participants: Rocketdyne, Aerojet, Lewis, Princeton University and Marshall.

2. RL-10 PROGRAM: A variable thrust demonstration contract has been signed by MSFC and Pratt and Whitney Aircraft. In this contract the government has the option of dropping the effort after the Pratt and Whitney Aircraft funded tests, or continuing the effort with government funds.

3. M-1 PROGRAM: Three significant meetings were held at Aerojet this week. The M-1 Engine Model Specification was reviewed and finalized. An M-1 Project Management Meeting and an Engine Concepts Review Board Meeting were held. Design and component testing status, anticipated problem areas, and future plans in the development of system components of the overall system were covered. A turbopump design review meeting was held with Lewis Research Center personnel participating. It revealed that the design approach Aerojet had chosen was questionable.

In view of NASA's decision with regard to NOVA, I have asked Aerojet to once more review their M-1 design approach in general with higher performance as a goal. The idea is to change from the quick and over-conservative to something more refined and challenging. (Hope this finds your approval.) It does. B

4. J-2 PROGRAM: Vertical test stand No. 1, which had a fire in the LOX tank, was reactivated and injector testing was resumed.

On 7-9-62 a meeting was held with Rocketdyne to discuss the overall program, including the projected overrun. An overrun of approximately $22.5 million is currently being projected by Rocketdyne with an attendant 37-month program through PFRT. PFRT is forecast for Sept/Oct 1963 now.

July 23, 1962

NOTES 7-23-62 GORMAN B 7/23

1. RL 10 ENGINE - Contract was signed on July 11 with Pratt and Whitney for the demonstration of variable thrust for the RL 10 Engine. This is a cost sharing type contract.

2. BOEING CONTRACT - Negotiations have been concluded with the Boeing Company for the three months extension of the existing S-IC contract. The total amount of the extension is $16 million and will provide services through October 1962. Boeing has been requested to submit a proposal by August 20 for the definitive contract. This contract will cover one dynamic test stage and ten flight stages at an estimated cost of over $400 million.

3. CHRYSLER CONTRACT - Final negotiations with Chrysler Corporation on the S-I program have been concluded with the exception of fee. Both Chrysler personnel and Bill Davis are in Washington today trying to resolve the matter of fee.

4. TEMPO II - The Tempo II has been grounded as of Sunday, July 22, on instructions from the Federal Aviation Agency.

5. TRAVEL FUNDS - In response to our request, Headquarters has provided an additional $30,000 in travel funds. $15,000 more will be available as a result of the grounding of the Tempo II. Washington personnel are here this week to discuss our overall travel problem. Numerous transfers were made between divisions to utilize funds available.

6. PERSISTENT PROCUREMENT PROBLEMS (See Haeussermann's NOTES of June 25, attached). The NOTES from Dr. Haeussermann point out that a procedure is necessary to speed up purchasing and delivery of small procurement items. This matter is being looked into again by Newby, working with the Astrionics Division.

NOTES - HAEUSSERMANN, 6/25/62

1. PERSISTENT PROCUREMENT PROBLEMS: It has been extremely difficult in the past few weeks to purchase small components on emergency basis. This was due to fund shortage and/or M-P&C's workload. In several projects such as Digital Command System for SA-6, Electron Beam Welding Studies, and Control Computer for SA-5, delays resulted or delivery dates were slipped due to delays in processing small purchases. Over the past six months, several meetings have been held with key personnel of P&C, FMO, TM Branch, CPO, and others in an attempt to devise some means to speed up the purchasing and delivery of small items on emergency procurements.

Problems directly related to this subject were mentioned in the Weekly Notes of 1/22/62 and 4/2/62 (copies attached). This division, with the knowledge and support of P&C FMO, TM Branch and CPO, is currently using one flexowriter and one tele. data machine to expedite the division's information to TM Branch. However, the use of this mechanized system does not effect the time consuming actions from that point on, which seem to be responsible for approximately 70% of our difficulty. Further study appears to be mandatory to streamline the present system. This division will continue to work with other elements of the Center in solving the problem.

NOTES 7/23/62 CONSTAN

B 7/23

1. CONSTRUCTION CONTROL AND SCHEDULE GROUP

The Facilities Engineering Office and the Michoud Operations will establish this week, a construction control and schedule group for the timely management of the construction and maintenance projects for Michoud.

2. SATURN S-I QUARTERLY REVIEW

The first Michoud Operations S-I Quarterly Review will be held at Michoud Operations July 23-25, 1962.

NOTES 7-23-62 DEBUS B 7/23

No NOTES received this date.

NOTES - GEISSLER - 7-23-62 B7/23

1. C-5 WIND LOADS DESIGN DATA: The need for obtaining the pad wind loads design data for the C-5 LOR vehicle is becoming more and more urgent. Refined design criteria will come from wind tunnel studies at the Langley Research Center. Tentatively, the tests are to be conducted in April 1963. Every attempt will be made, however, to have these tests performed as early as January 1963. The paper work for transfer of funds to Langley ($100,000) has been approved by the Saturn Systems Office and released to Financial Management. The money will be transferred as soon as funds are available. ✓

2. GUIDANCE AND SPACE FLIGHT THEORY CONTRACT: The ninth technical meeting at MSFC between Marshall and contractor personnel concerning the "Guidance and Space Flight Theory Contract" was held July 18 and 19. Sixty contractor and in-house personnel attended. Northeastern Louisiana State College reported on an existence theorem for multi-variable least squares approximating polynomials. Dr. Hunt of MSFC reported on a procedure for isolating conjugate points. Mr. Silber of MSFC reported results of launch window studies conducted here. Dr. Schulz-Arenstorff reported on the development of periodic orbits around the moon. Grumman Aircraft delivered a three-dimensional deck for calculus of variations space flight calculations using direct methods. NAA delivered a tape for differentiation of functions. The University of North Carolina reported that they had solved the problems in using linear programming for multi-variable polynomial approximations and will deliver a report of these solutions within the next month. ✓

E.G. I'm glad to hear that - if only I knew what you meant! B (don't bother to reply)

3. SATURN BASE HEATING PROGRAMS: The S-II parameter base heating program at Cornell is approximately fifty percent complete. Results seem to indicate that maximum heating occurs between two outer nozzles and that choked flow seems to occur at about 200,000 feet. The short duration technique for generation of base heating data which has been used so successfully in S-IV-6 engine and S-II programs without ambient flow has now been investigated with ambient flow. The results were quite satisfactory and the S-IC base heating investigations will be made using the short duration technique. High altitude and transonic tests will be made at Cornell Aeronautical Laboratory facilities. Additional data will be obtained in Lewis Research Center's 8 x 6 and 10 x 10 tunnels. Most of the tests should be completed by the end of the year. ✓

4. FLIGHT EVALUATION WORKING GROUP: A Data Reduction Panel was established within the Flight Evaluation Working Group to coordinate all pertinent data equipment plans. The first meeting was held on July 18 and 19. ✓

NOTES 7-23-62 GORMAN B 7/23

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NOTES 7-23-62 GRAU B 7/23

STAFF ASSIGNMENTS, M-SAT:

Verbatim I quote a statement which Dr. Shratter (M-SAT) made to Mr. Hyatt, Mr. Rosen, Mr. Cartwright, and others in Washington: "For Reliability and Quality Assurance, we are attempting to establish an office in M-SAT that would be the control and focal point for all contractor activities in these two areas, at least. He might yet find himself dealing directly with some of the divisions under this plan; but it would be only after coordinating with M-SAT; so that we know what is happening at all times. Also, final decisions could not be made without approval from M-SAT."

In this connection I invite your attention to my NOTES 2-12-62, paragraph 4 (attached) and the enclosure to those Notes (also attached). Nothing happened at that time except a phone call by Dr. Lange in which he assured me the wording was not carefully selected and there would be no interference with the assignments of the Quality Assurance Division and that his staff member would act as a coordinator and keep close contact with this Division.

I strongly recommend that the Project Offices discontinue to hire more staff members of this type and that you consider to introduce again the management concept which has successfully been used in the Hardtack Operation as well as in the Pershing Project, where the Project Manager had entrance in and support by each Division through a project engineer who was authorized to commit his Division and who solicited all required contributions by his Division and carried responsibility for this.

On July 14, I had a phone conversation on this subject with Mr. Hueter since a similar development as in M-SAT can be observed in the L&MV Office after the retirement of Mr. Rosson. He promised to look into the matter and to give me an answer.

If the Project Offices should not be satisfied with the service they receive from the Quality Assurance Division in any way, I would like to be notified immediately that I can take corrective action if necessary.

Spaces which have been assigned to the Project Offices for the outlined purposes should be reassigned to the Quality Assurance Division.

ACTION REQUIRED.

B 7/23

NOTES -HAEUSSERMANN, 7/23/62

1. MANUAL/AUTOMATIC RENDEZVOUS STUDY: Plans are being made to expand the Analog Simulation of Docking Dynamics that Advanced Studies Branch (Digesu) has going in Computation Division. This expansion is for the purpose of putting "man-in-the loop." Plans are to have instrument and visual displays and manual controls so that we can educate ourselves with a firsthand knowledge of man's influence in the rendezvous and docking problem. ✓✓

W.H. Request an occasional briefing, possibly with pictures, on this program B

2. STATUS OF SLED TEST PROGRAM: Instrumentation of the Acceleration Test Sled and modification of the GSE Van are progressing satisfactorily to meet the August 21 schedule for the first trial runs on the supersonic track at Holloman AFB. Dummy ST-124 platform system components will be used for the trial runs. ✓

3. STATUS OF ST-124P IN SA-3: The ST-124P has passed a functional, compatability test with SA-3 at Quality Division. Installation of a special ventilated cover containing a small blower has resolved temperature problems. Final calibration tests are under way in our Gyro Branch prior to simulated flight tests scheduled at Quality Division during early August. ✓

4. STATUS OF ST90S FOR INSTRUMENT UNIT BREADBOARD: The ST-90S, for the breadboard, has received its first functional system test. Special qualification tests of the extended azimuth drive are under way.

5. REFINEMENT OF THE AB-5 GYRO: During the past four weeks tests were performed to match the axial and radial stiffness of the AB-5 air bearing. The AB-5 has always been found to be stiffer radially than axially due to the fact that the specific load on the endplates is higher than that on the sleeve. These tests showed that the axial stiffness could be made equal to the radial stiffness by reducing the axial air gap and by increasing the air flow of the endplates. Tests were performed on an assembly having a radial air gap of .00075" and an axial gap of .00055". An operation pressure of 7.5 psig was used and the air consumption of the entire assembly at this pressure was approximately 3350 scc/min. The axial and radial load vs. displacement curves for this assembly were approximately linear. The radial and axial spring constants were both approximately equal to 10 kiloponds/cm. The dynamic characteristics of this bearing were in general superior to the original bearing (AB-5 used in Pershing) operated at 15 psig supply pressure (See M-ASTR-G-WP-20-62).

B
5/23

NOTES 7-23-62 - Helmburg

1. SA-T4: Test SAT-29 was performed 7-17-62 on stage SA-T4 for a duration of 120.03 seconds. Cutoff was initiated by observer upon completion of the scheduled duration. The primary test objectives, determination of the prototype S-1-5 GOX valve operating characteristics and the required GOX flowrate for tank pressurization without venting, were satisfactorily obtained. Engine performance during the test was satisfactory and gimbal program with engine positions No. 3 and 4 was performed. There was no hardware damage to the test stage or the Static Test Tower facilities. Stage SA-T4 was removed from the Static Test Tower 7-20-62 to be modified for SA-T5 configuration. ✓

2. RL-10A ENGINE TESTING, MSFC: A 9 sec. (scheduled 10 sec. duration) duration hot firing test was conducted on engine No. 1713 at the LH_2 Familiarization Facility 7-21-62. Records indicate satisfactory performance of facility/engine hardware. Cutoff given because differential pressure between the hellum purge cavity and the LOX purge cavity exceeded red line value. No additional tests planned soon due to personnel participation in S-IV and Centaur Review Teams and Centaur tankage pressure fatigue tests. ✓

3. CENTAUR: The flight stage, F-2, is scheduled for installation in the GDA static test stand at Sycamore Canyon 7-26-62. MSFC Review Team (No. 2) will monitor all aspects of installation and testing. ✓

Centaur tank, C-2, was received 7-21-62. Preparations are underway to convert the "Hop Stand" so fatigue pressure tests can be accomplished. Planned to perform 30 pressure cycles on tankage to flight values (41 p.s.i. in LOX tank - 22 p.s.i. in fuel tank) will utilize LH_2 in fuel tank and LN_2 in LOX tank. Testing scheduled to start 8-11-62. ✓

4. S-IV BATTLESHIP TEST PROGRAM AT DAC: DAC scheduled to start Cold Flow Tests 7-26-62. MSFC Review Team (No. 1) will monitor tests and determine if O.K. to hot fire. If all is well, hot firings planned 8-3-62. ✓

5. MTF: In compliance with your suggestions and recommendations made during presentation of MTF Master Site Plan 7-18-62, initiating immediate action in the following areas:

a. Proceeding with design criteria of the MTF S-IC test facilities, based on presentation decisions. ✓

b. AE contractor is to begin additional studies on effect of various sound suppression methods for MTF facilities. ✓

c. Investigating reprogramming of FY 63 funds to permit incorporation of F-1 Engine System Development Stand to support S-IC program at MTF. No difficulties are anticipated in siting this stand within the scope of the current site plan. ✓

K.H.

→ including another look at Luchsinger's suggestion to move S-IC and S-II stands a bit further to the Northwest.

B

B
5/23

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K.H.
→ including another look at Luchsinger's suggestion to move SIC and SII stands a bit further to the Northwest.
B

B 7/23

NOTES 7-23-62 HOELZER

1. MICHOUD COMPUTER CENTER (SLIDELL): It has been determined that a separate contract for operating the computer center at Slidell should not be negotiated at the present time. It is still planned that the center is to become operational in October and an interim solution for activation had to be reached. The only solution which could be considered interim was to activate the center through the use of resources in the Computation Division (see attachment 1). This will be done through the use of Civil Service personnel and existing contracts. It will be necessary to amend present contracts with additional funds for this peakload situation. A portion of the presentation given last Thursday to Mr. Dixon on S-1C was devoted to the central computer facility at Michoud. The Slidell facility was described and it was indicated that the computer center would utilize this facility. Mr. Gorman was present at the presentation.

Eberhard R.

Could appreciate a briefing on your reasoning behind this decision

B

NOTES 7-23-62 Koelle

B 7/23

1. LUNAR LOGISTICS PROJECT

According to Headquarters informal statements (by Capt. Hayes), Dr. Shea's office is planning to have one or more studies each, for the braking stage plus landing stage and the payload, placed with contractors. Work statements are in preparation. I have not yet received any official information or formal request.

Our own plans are to have a very short preliminary briefing ready for you for the next Council meeting indicating our desire to obtain project management responsibility here at MSFC. Further, we hope to have a detailed preliminary project development plan (PPDP) ready in about 2 - 3 months for the total "Lunar Logistics Project", consisting of two vehicles (C-1B and C-5). ✓

2. NOVA

Informal discussions were held with GD/A and Martin on Friday, July 20 about the NOVA study contract. There seems to be a good understanding of the study and of what is expected; however, there may be some difficulty with GD/A on how we handle the hardware experimentation part of the effort. They had proposed approximately $500,000 of GD/A money (which would come out of overhead) and do not want it included as part of the contract. Martin had proposed approximately $800,000 (out of profit) and it will be part of the contract. We will discuss the GD/A situation with Gorman/Newby and Davis and advise you of the results. Plan to have contracts signed in approximately 3 weeks. ✓

NOTES 7-23-62 KUERS

B 7/23

1. S-IV Stage: The S-IV Stage common bulkhead for the SA-6 vehicle has been rejected due to the non-conformance to specifications of the test panels which were included in the bonding tool at the time this bulkhead was bonded. The decision has been made to remove the honeycomb preparatory to repeating the bonding procedures. Impact on the SA-6 schedule has not been established. ✓

2. S-IC: A complete listing of 157 assembly and sub-assembly tools has been established jointly with Boeing. An agreement on the split of tool design responsibility has been reached whereby the design for the major tools for the tanks and the thrust structure will be carried out in-house and Boeing will take over responsibility for inter-tank structure, forward skirt and fins. All tool drawings will be mutually reviewed and signed by both parties. Boeing will, of course, fabricate all the tools for us. They will also install them in our shops and be responsible for necessary modifications during try-out period. The Boeing work for tool design and fabrication will be controlled by written task order assignments by us under item 2 of the follow-on contract.

✓

NOTES 7-23-62, Lange

B 7/23

1. General - M-SAT personnel assisted Mr. Rosen preparing the FY-63 C-1, C-IB, and C-5 funding requirements plus MSFC recommended schedules for presentation to Mr. Holmes. MSFC's recommendation were well received by Mr. Rosen and will be presented to Mr. Holmes. Among specific stands taken by Mr. Rosen were the need for CSD to free MSFC for work on C-IB & C-5 and the additional C-5 funding requirement for in-house work.

The ground rules for the budget call (FY-63 Operating Plan & FY-64 estimates) were discussed between OMSF (Mr. Shea's & Lilly's Office) and MSFC at Hqs. Areas of disagreement were the 1st launches of C-IB & C-5 and the target launch date for manned lunar landing. It appears these points will be discussed by the Management Council on 7-31-62.

2. C-1: S-I -

SA-4 - Undergoing pre-static checkout, forecast delivery to static test 8-4-62. Dummy S-IV, S-V and payload are in final modification.

SA-5 - Forecast delivery to M-QUAL for pre-static checkout 11-5-62.

SA-5D - Tail assembly about 80% complete, spider beam about 90% complete. Assembly station will be available 8-13-62.

Instrument Unit - Astrionics Test-Completion forecast 7-27-62 (structure only).

S-IV - Hydrostatic Vehicle helium test on 7-15-62 (27 psig for 5 min. in hydrogen tank) indicated pressure fluctuation inside common bulkhead. Investigation is under way, burst test may be postponed to mid-August.

Dynamics Vehicle - insulation of hydrogen tanks expected to be completed 7-25-62.

All Systems Vehicle - expected completion date in assembly tower is 8-4-62.

SA-5 - Vehicle assembly is waiting for resolution & disposition of discrepancies on common bulkhead.

3. C-5: S-IC - 90 day contract extension was negotiated with Boeing last week for a total of $15,954,096 excluding facilities & equipment, but including a fixed fee of $924,250. Contract will be available on or about 7-23-62 for Hqs. review.

On 7-16-62 an F-1 test with 16:1 area ratio thrust chamber scheduled for 150 sec was cut off at 24 sec. due to combustion in-stability.

Joint P&VE & ASTR presentation on F-1 Gimbal System was given to M-DIR on 7-19-62.

Boeing was requested to re-evaluate their 7-17-62 presentation on activation of Michoud in light of funding limitation.

Follow-on contract - RFQ proposal is requested by 8-20-62.

S-II - Contract negotiation at NOO still in progress. Prime emphasis should be availability of acceptance test stands at MTF.

S-IVB -

Facilities Review Board approved site plan for static test facilities & reprogramming of $40,000 for initiation of facilities design criteria as requested as separate action for emergency C of F authorization for Complex Beta.

4. Apollo: MSC reacting to our plea during Houston visit has formed an Emergency Detection Committee which will clear up internal discord before meeting MSFC for joint discussion in August. Slayton will be a member.

Resuâts of joint C-IB Program study now expected about end of August. MSC is de-emphasiging C-IB three stager.

B 7/23

NOTES, 7-23-62, MAUS

1. CONSOLIDATED PLANNING AND SCHEDULING - On July 18 representatives of OMSF, MSC, LOC and MSFC discussed OMSF-proposed launch dates and program assumptions. The three centers felt that the OMSF dates were extremely optimistic and technically unsound. OMSF schedules and guidelines will be presented for Management Council approval next week. Subsequently, approved schedules and guidelines will be sent to the centers to be used for compilation of FY 64 Budget Estimates, FY 63 Financial Operating Plan, and LOR schedules and cost estimates. We are documenting the MSFC position for your use at the Management Council and will brief you July 30. ✓

2. NOVA - Jay Foster learned that OMSF's interpretation of the delay in the NOVA program was that NOVA would be two years behind C-5, and not two years behind the MSFC-proposed NOVA schedule. This was objected to by MSFC, and the assumption was changed to read: "Initial launch of NOVA (chemical) will be in calendar year 1968." This implies a 3 to 15 month delay as compared with the schedule in our March 18 Consolidated Scheduling and Funding Document. ✓ Hardly! B

3. PERT TRAINING - PERT Training for people at the operating level was satisfactorily completed Friday, July 20. Middle and top management training remains to be done. ✓

4. VISIT OF MIT PROFESSOR ON PROJECT MANAGEMENT - You inquired, by comment on my 6-18-62 Notes, how we made out during the visit of Professor Don Marquis (see extract of Notes attached). Because the purpose of his visit was to establish a management research project at MSFC, we do not expect any direct findings for at least a year. This was a preparatory visit and from all indications was very satisfactory. His visit was coordinated by Mr. Andressen, and he visited Mr. Hueter, Dr. Lange, Mr. Koelle, Mr. Williams, and people from P&VE, and M-AERO, all of whom were most cooperative. We expect him to visit MSFC again in late August, at which time he would like to meet with you. ✓

B 7-23

NOTES 7-23-62 MRAZEK

1. RIFT PROGRAM: A meeting was held 7-19-62 between Harry Finger and Dr. Seamans concerning RIFT facilities. The following actions are required:

a. Manufacturing Site - Headquarters has requested a letter from MSFC stating that the use of the Michoud Plant for RIFT has been investigated and that no space is available. A Gulf area manufacturing site must be built with C of F monies to manufacture RIFT in that area. Headquarters will then authorize MSFC to look at alternate sites.

b. Dawsonville Radiation Effects Reactor Facility - Headquarters wants some assurance from the AEC that LH_2 experiments can be conducted at the site before NASA assumes ownership. The information required, including a preliminary nuclear hazards analysis, was transmitted to Headquarters 7-20-62.

Harry Finger signed the RIFT Project Development Plan on 7-19-62. ✓

2. SA-5: The first structural test has started on the large fin assembly for SA-5. ✓

3. C-5: A meeting was held between Propulsion & Vehicle Engineering Division and Astrionics Division personnel to discuss a revised dynamic analysis of the C-5 vehicle system. The refined analysis shows that the presently quoted structural weights would suffice with 6.6 cps instead of the previously quoted 8 cps for engine-actuator-structure stiffness. ✓

4. BOEING PERSONNEL STATUS: Onboard as of 7-19-62: 332. ✓

W.M.

Is this just a paper reshuffle to set the stage for official Hq acceptance of the Moffett site? Or is Seamans opposed to this site?

B 7-23

B 7-23

NOTES 7-23-62 Rudolph

Negative

B 7-23

NOTES 7-23-62 Stuhlinger

1. CENTAUR FAILURE ANALYSIS: A meeting was held with Light and Medium Vehicles Office, and with Aeroballistics Division, to discuss Research Projects Division's analysis of the Centaur break-up pictures. A joint meeting with Convair will be held soon. Results of the analysis will be reported after that meeting. ✓

2. SUPPORTING RESEARCH: OART authorized this Center to obligate a certain amount of 1st Quarter 1963 supporting research funds for continuing contracts, in order to avoid their interruption. Mr. Canright, upon our request, promised to do something similar for OMSF-sponsored contracts. ✓

3. RESEARCH INSTITUTE: The University of Alabama proposal for NASA support of the Research Institute will go to Washington unsigned today for further study by Drs. Small and Kurzweg. If approval cannot be obtained, another large meeting will be held in Washington on July 31. ✓

4. SPACE SCIENCE SUMMER STUDY: Mr. Heller attended the plenary session of the Space Science Study conducted by the Space Science Board at the State University of Iowa. The following recommendations were made:

(a) Put more effort behind Ranger and Surveyor programs, try to obtain early results, even with experiments simpler than those presently planned for Ranger. ✓

(b) NASA should initiate more ground-based research like IR and UV observations by astronomical observatories. ✓

(c) Nature and behavior of dust layer must be known before men land. The dust may cover and stick to all surfaces, including thermal control and optical surfaces. ✓

(d) Meteoroid and radiation hazards studies are badly needed. ✓

(e) Strong emphasis should be placed on further lunar mapping by Air Force, Army, and U. S. Geological Survey. ✓

(f) Close surface survey by a lunar TV orbiter was termed "highest yield investment" NASA could make. ✓

(g) Sample return was strongly recommended. ✓

(h) Future studies of shape and density of moon, stability of lunar orbits, etc., were termed very desirable. ✓

B 7-23

NOTES 7-23-62 WEIDNER

1. H-1 PROGRAM: A one-hundred-twenty-second duration firing was conducted on the eight engines of the SAT-4 booster on 7-17-62. According to the initial review of test data, all engines performed satisfactorily.

R&D effort at Rocketdyne is still concentrated on two prime areas of concern. These are the turbine exhaust duct cracking and the thrust chamber tube-splits.

The thrust chamber tube-splitting problem now appears to be connected more with the 188K thrust level than with the injector configuration. A thrust chamber which has recently been sectioned shows evidence of wide spread sulfur embrittlement not previously found on 165K engine thrust chambers.

2. RL10 PROGRAM: P&WA has completed one throttling test in which the engine thrust was reduced by approximately 50% thrust. Lewis Research Center has completed two throttling tests down to approximately 30% thrust. There were no instances of combustion instability.

3. F-1 PROGRAM: Engine 007 was destroyed during test. Like engine 008, this engine had gone well into mainstage operation and the failure was caused by unstable combustion. Failure occurred 24 seconds after ignition. Preliminary reports indicate that damage was less than on engine 008.

An Ad Hoc Committee has been formed to monitor and assist in resolving the recent problem of F-1 combustion instability.

Both instances of rough combustion occurred after the injectors involved had accumulated 300 and 600 seconds of total running time. There is some evidence that possibly other circumstances have caused this roughness. Lets hope that this is found to be true. Will proceed with caution. Ad Hoc Committee has not produced anything novel yet.

Design is complete on the three acceptance test stands and NASA Headquarters approval has been received by the MSFC Facilities Engineering Office to authorize advertising of the construction bid on 7-24-62 and to award the contract on 8-28-62.

$2.62 million of the scheduled $2.71 million July C of F payback has been received at MSFC.

4. J-2 PROGRAM: A J-2 Technical Program Review Meeting will be held at MSFC on 7-25-62.

5. M-1 PROGRAM: In locating their M-1 test stands, Aerojet is confronted with safety circle problems similar to those of the S-II program; however, less serious.

July 30, 1962

NOTES 7-30-62 GORMAN B 7-31

*1. MICHOUD CANAL - You may recall that the New Orleans East Corporation has ownership of the Michoud Canal. We have had a number of meetings with the officials of New Orleans East in an effort to arrive at a lease agreement which would satisfy Marshall's needs. The latest development in the lease negotiations would appear to make the Michoud Canal unattractive. In short, Marshall is being asked to bear the cost of a dredging operation estimated from $150,000 to $250,000. Before we proceed further with New Orleans East, we are going to explore the availability of the Army Transportation Company Dock Area, located at the Northwest corner of the Michoud property. This dock area may be even more desirable from an operational point of view than the Michoud Canal. Our problem here is to convince the Department of Defense of NASA's needs. The Washington office is on board and we are asking them to contact the Department of Defense with the idea of transferring the dock area to NASA. ✓

*2. M-1 FACILITIES -AEROJET - Aerojet General representatives met with our Facilities Engineering and Legal people on July 26 to negotiate the "J" area option to buy or lease. It looks like we will go for a lease agreement with Aerojet to provide NASA with a voice in the utilization of the facilities. Aerojet does not agree with the safety criteria required by the joint Air Force-NASA safety study. We are attempting to resolve this problem prior to the start of contract negotiations on August 13. Rod Stewart, of the Engine Management Office, is carrying the ball on the safety problem. ✓

3. BOEING CONTRACT- A flap developed late Friday with respect to Washington approval of the 90 day extension of the Boeing contract. We got word that Holmes' office was not going to approve the 90 day extension unless we could live with our previous commitment for a definitive contract with Boeing. I talked to Milt Rosen and George Vecchietti this morning and have their assurance that the 90 day extension will be approved and in our hands by August 1. According to Vecchietti, the definitive contract with Chrysler will be approved either today or tomorrow. It is also effective August 1. You may know that we had some problems with Chrysler on fee which held up the contract for a week or more. Unfortunately, Marshall has committed itself to certain time schedules for having definitive contracts with North American, Boeing, and Douglas. While I agree that we should establish target dates for accomplishing contract actions, it is not practical to assume that we will meet these dates at any cost. Holmes' office, and Holmes himself, tend to hold our feet to the fire on these target dates. Such a position is not supported by Brackett, Siepert, and others. While we expect to do everything possible to meet our target dates, I am opposed to placing undue pressure on our contracting people. The contractors would like nothing better.

H.G. Included in memo to Seamans 8-6-62

On what fee did we finally settle? B

I'll talk to Brainerd Holmes on this. Bonnie: Please remind me to call him! B

NOTES 7/30/62 CONSTAN

B 7-31

1. Computer Facility - Slidell

Mr. Bob Reeves has been assigned by the Computation Division to act as the coordinator for the computer facility at Slidell, Louisiana. Mr. Reeves will transfer in the near future to Michoud Operations. ✓

2. Office Space - Boeing

There will be a need for additional office space for the Boeing Company in the vicinity of Michoud Operations in New Orleans. The amount of space appears to be somewhere between 300,000 and 400,000 sq. ft. A study will be completed this week to determine the exact amount of square footage and the time phasing that such footage will be needed by the Boeing Company. ✓

3. Contracting

This week Michoud and Saturn Systems Office will recommend to your office the contracting authorization that it is felt will be needed by Michoud Operations in New Orleans. Also recommendations will be submitted relative to the construction manager contractor concept and flexibility required in A-E and construction contracts. ✓

B 7-31

NOTES 7-30-62 DEBUS

No NOTES received from Dr. Debus this date.

NOTES - GEISSLER - 7-30-62

B 7-31

1. C-5 WIND TUNNEL TESTS: Aeroballistics will sponsor two C-5 meetings in August. On August 9 the key structural dynamics people from Langley, MSC, Ames and Marshall will meet to discuss C-5 aeroelastic wind tunnel programs (flutter and ground wind models). On August 21, all C-5 stage contractors, NASA Research Centers and MSC are being called together to discuss the entire C-5 wind tunnel program. The major purpose of the August 21 meeting will be to formulate management guidelines on such items as project management, coordination and dissemination of data to all participants in the C-5 program. ✓

2. LIAISON WITH LANGLEY: Aeroballistics has been toying with the idea of establishing a resident project engineer at Langley for Experimental Aerodynamics. In feeling out Langley people on this, they stated that they had a set-up like this with MSC, however, the man is on their payroll and is cognizant of the entire center-to-center relation. Apparently they would prefer something like that with this center and they intend to arrange for Mr. Thompson to approach Dr. von Braun on this. We would have no objection to this, however, an office like that may in the long run become more of a bottleneck to us than of real assistance in our area as we had visualized it. E.G. What do you recommend then? B

3. SATURN OPERATIONAL FLIGHT CONTROL: A special meeting of the Steering Committee for the RCA study of Saturn Operational Flight Control was held on July 24 in Huntsville. As a result of our criticism concerning progress and status of the study the situation now appears to have significantly improved. The presentation was very satisfactory both in quality and underlying efforts. ✓

B 7-31

NOTES 7-30-62 GRAU

1. SA-3 FINAL CHECKOUT: SA-3 is undergoing mechanical leak and functional testing in Bldg. 4708 pressure cell. Effort is being expended to pick up time on the schedule. ✓

2. SA-4 PRE-STATIC CHECKOUT: The vehicle has been released to the Manufacturing Engineering Division for preparation for transfer to the Test Division. ✓

3. CENTAUR: On July 22, Vehicle F-2 was moved from the factory to Sycamore Canyon to begin Propulsion Systems Tests. Some damage to the tank was incurred during loading and transit. X-ray examination is in process. ✓

It is understood that shipment of the Missile Guidance System for Centaur direct from the manufacturer (Minneapolis-Honeywell, St. Petersburg, Florida) to the launch site is being seriously considered. In the opinion of Quality Assurance Division, omission of the Missile Guidance System from vehicle checkout at General Dynamics/ Astronautics would be a radical departure from established and proven practices and philosophies of MSFC and should not be considered. L&MV Office was notified accordingly with the request for proper action. ✓ H. Hueter Comments? B

4. LEWIS RESEARCH CENTER: A general orientation on the NASA Quality Documents, NPC's 200-1, 200-2, and 200-3 and on the activities of the Quality Assurance Division of MSFC was held with personnel representing the Reliability and Quality Assurance organization at Lewis Research Center. Considerable interest in our activity has been shown by the Lewis people in the past few months, demonstrated by the fact that this was the fourth group of Lewis people which asked for and received such an orientation. ✓

NOTES 7-30-62 GORMAN B 7-31

*1. MICHOUD CANAL - You may recall that the New Orleans East Corporation has ownership of the Michoud Canal. We have had a number of meetings with the officials of New Orleans East in an effort to arrive at a lease agreement which would satisfy Marshall's needs. The latest development in the lease negotiations would appear to make the Michoud Canal unattractive. In short, Marshall is being asked to bear the cost of a dredging operation estimated from $150,000 to $250,000. Before we proceed further with New Orleans East, we are going to explore the availability of the Army Transportation Company Dock Area, located at the Northwest corner of the Michoud property. This dock area may be even more desirable from an operational point of view than the Michoud Canal. Our problem here is to convince the Department of Defense of NASA's needs. The Washington office is on board and we are asking them to contact the Department of Defense with the idea of transferring the dock area to NASA. ✓

*2. M-1 FACILITIES -AEROJET - Aerojet General representatives met with our Facilities Engineering and Legal people on July 26 to negotiate the "J" area option to buy or lease. It looks like we will go for a lease agreement with Aerojet to provide NASA with a voice in the utilization of the facilities. Aerojet does not agree with the safety criteria required by the joint Air Force-NASA safety study. We are attempting to resolve this problem prior to the start of contract negotiations on August 13. Rod Stewart, of the Engine Management Office, is carrying the ball on the safety problem. ✓

3. BOEING CONTRACT- A flap developed late Friday with respect to Washington approval of the 90 day extension of the Boeing contract. We got word that Holmes' office was not going to approve the 90 day extension unless we could live with our previous commitment for a definitive contract with Boeing. I talked to Milt Rosen and George Vecchietti this morning and have their assurance that the 90 day extension will be approved and in our hands by August 1. According to Vecchietti, the definitive contract with Chrysler will be approved either today or tomorrow. It is also effective August 1. You may know that we had some problems with Chrysler on fee which held up the contract for a week or more. Unfortunately, Marshall has committed itself to certain time schedules for having definitive contracts with North American, Boeing, and Douglas. While I agree that we should establish target dates for accomplishing contract actions, it is not practical to assume that we will meet these dates at any cost. Holmes' office, and Holmes himself, tend to hold our feet to the fire on these target dates. Such a position is not supported by Brackett, Siepert, and others. While we expect to do everything possible to meet our target dates, I am opposed to placing undue pressure on our contracting people. The contractors would like nothing better.

H.G. On what fee did we finally settle? B

I'll talk to Brainerd Holmes on this. Bonnie: Please remind me to call him! B

B 7-31

[illegible]

1. DEAD COW PROBLEM: The report that cattle had died as a result of waste materials found on NASA is considered premature. A check with the Post Engineer and Post Veterinarian discloses that the source or kind of poison is unknown. The cows have roamed through the contaminated areas resulting from the Chemical Corps operations of World War II. Samples of water, soil, and tissue from cows have been sent to Auburn for examinations. Results of these tests have not been received.

2. DAC S-IV GSE: DAC representatives were made aware of the problem concerning the leaking propellant connectors on swing arm No. 2 for the S-IV stage of the SA-5 vehicle. A DAC representative is at MSFC for the specific purpose of solving the problem. Additional tests were run with liquid nitrogen and the couplings still leak excessively when connected in the normal launch condition. Tests indicate test side loads on the couplings are causing the leakage.

3. MTF: Action has been initiated by the MTF Planning Office to incorporate modification to existing A-E Contract (NAS8-3444) with Sverdrup & Parcel and Associates to include preliminary criteria for the S-II test complex at MTF. Authorization of funds in the amount of $105,000 is anticipated by 8/1/62. Finalization of above modification is expected during week of 8/12/62.

4. FACILITIES: The electrical subcontractor, Sarocco Electric Company, for the modification of the West Side of the Static Test Tower, has refused to sign a contract with the Union. A strike was threatened, which would stop all construction at Redstone; however, the Union has deferred their action pending a meeting 8/3/62 between representatives of the local and international offices of the union and MSFC and Mobile Labor Relations Office, the prime contractor, Greenhut Construction Company and his electrical subcontractor. Attempts will be made to iron out the differences. Any strike will adversely affect facility schedules.

5. S-IV BATTLESHIP TEST PROGRAM AT DAC: Latest schedule is for cold flow to start 8/1/62, with hot firing scheduled for 8/7/62.

6. CENTAUR TANK FATIGUE TESTING: Test setup is progressing on schedule, with testing due to start on 8/11/62.

7. MARINE ACTIVITIES: Bulletin from Corps of Engineer states railroad bridge at Florence, Alabama, will have draw section floated into place 8/13/62, thereby limiting vertical clearance to 37 feet until around 9/15/62. Our barges require 38 feet clearance. Following steps are being taken to resolve possible problem: (a) compromise schedules between barge shipment and bridge construction; and (b) utilize combination of maximum ballast and minimum pool elevation to provide clearance.

B 7-31

NOTES 7-30-62 HOELZER

1. STATUS OF DECENTRALIZED COMPUTERS: All four General Electric 225 computers are installed and accepted. These machines have approximately one-twentieth the computing power of the large IBM 7090's of our central computer installation. Many small jobs which run for minutes or less on the 7090's could be more economically done on the 225's if we had additional 225 programmers. Twenty-four of the total of forty personnel of the Digital Projects Branch are assigned to the 225 operation. Fourteen of this group worked a total of 240 hours overtime during the last pay period. They are supported by only nine GE contractor personnel operating the HIC Building computer. Since additional Civil Service spaces will not be available, it is planned to add some fifteen GE personnel to the decentralized operations during the next contract period beginning in September. Dr. McCall has been informed of this situation and agrees that this is the only logical step to take. (See NOTES 6-25-62, attached) ✓

O.K. B

2. IBM 7090 SITUATION: The IBM 7090 utilization has again reached a critical period. In addition to operating our own computers in excess of three shifts, we have utilized 101 hours of Army 7090 time and could have used more if funds were available. We have budgeted for 100 hours per month through December, at which time our 7090's will be up-dated to 7094's which should alleviate this situation. ✓

3. FLIGHT SIMULATION FACILITY: The Flight Simulation Branch is working with the Advanced Studies Branch of Astrionics Division on the design of a manually controlled Orbital Docking Simulator. Existing facilities of the Flight Simulation Branch will be used with some auxiliary display and control equipment which is now being specified and designed. The steel structure for the Extended Flight Simulation Laboratory has been completed. Completion date for the building modification is October 1, 1962. ✓

NOTES - HAEUSSERMANN, 7/30

B 7-31

FLOTATION GYRO FACILITY: Construction program for this facility has been in a static condition for sometime due to a variety of events and circumstances (e.g., cancellation of the ST-130 for Saturn, lack of Centaur program funds to cover the total cost). Now with our extensive evaluation of the Centaur, the need of the facility has grown even more acute. Regardless of the outcome of the evaluation, I strongly feel we should establish and maintain a capability to thoroughly examine and evaluate floated gyros. The facility will enable us to respond quickly to any future evaluation request involving such devices plus making it possible for us to consider their use whenever their suitability is established. It is imperative that early action is taken to provide this facility. L&M Office advises that Headquarters approval for use of Centaur FY 63 funds is being delayed, pending decision on the Centaur guidance system. Events and dates leading to the present status:

I agree! B

March 18, 1961 - Saturn guidance funding plan was formulated.

April 26, 1961 - Decision was made that the project would be funded one-half Centaur, one-half Saturn. (Copy of your note is attached.)

May 4, 1961 - This Division made a formal request to Technical Services Office to establish a project for flotation gyro work.

May 18, 1961 - Project was approved by the Facilities Review Board.

June 6, 1961 - Criteria was submitted to Technical Services by this Division.

June 24, 1961 - Five A-E's were recommended by A-E Selection Board.

August 16, 1961 - Jackson and Mooreland, Inc. was selected as the A-E.

September 5, 1961 - Funds were issued for design work.

October 3, 1961 - Cancellation of ST-130 (Rosen letter to Dr. von Braun.)

December 1, 1961 - Notification of total funding to be provided by Centaur Program. (Memo to Facilities Engineering Office from ASTR-DIR.)

December 14, 1961 - Design was started. Since the designs of both A & B Wing facilities were underway it was decided to complete both designs but only construct the B Wing phase to satisfy the requirement of flotation gyro investigations.

*March 3, 1962 - Design change of B Wing initiated.

April 24, 1962 - Design was completed on the B Wing Phase.

May 1, 1962 - Design was completed on the A Wing Phase.

W.H. need any help? If so, please be specific. B

*Design philosophy was changed to provide required facility at minimum cost. This involved added floor space (Approved by Hqrs) appended to present B Wing rather than the more costing approach of modifying existing facilities.

B 7-31

NOTES 7-30-62 Koelle

1. LUNAR LOGISTICS PROGRAM

We should try to narrow down the large number of possibilities in the very near future. First, we have to make a choice between ballistic flight with near vertical descent and descent through lunar orbit. In the first case, we would want a 100 to 200K thrust level in the braking stage; in the second case, we would want 2 or 3 RL-10 engines. If the latter case is the adopted solution, we probably can use the same stage as a third stage for C-1B escape missions. There are more angles to it and I would appreciate it if we could set up a meeting within the next two weeks with the following people attending to discuss major problem areas and alternatives:

Dr. von Braun, Dr. Rees, Dr. Geissler, Mr. Mrazek, Dr. Haeussermann, Mr. Schramm, Mr. deFries, Mr. Sanders and Mr. Koelle.

2. NOVA

Contract negotiations with GD/A start Monday, July 30 and with Martin Tuesday, July 31. No particular trouble is expected - think we have the supporting hardware problem with GD/A under control now. Schedule: contract signed effective August 13 with Contractor Orientation Meeting at MSFC on August 15 (Wednesday, Director's Conference Room, 8:30 a.m.).

H.H.K.
Please tell me on this. We had a long discussion on this subject in the Management Council, 7-31,
B

H.H.K.-
Let's discuss this, too
B

NOTES 7-30-62 KUERS

B 7-31

1. C-1, SA-5: We have encountered an interface problem between the S-I and S-IV Stage. The drill fixture for locating the connecting bolts and guide pins has been designed and fabricated from a master-jig by DAC. This jig is not rigid enough to stay within the close tolerances required to guarantee the mating of both stages at the launch site. Since SA-5 has already been drilled with this fixture the Assembly Working Groups is in contact with DAC to work out a solution. ✓

2. CONTRACTOR PERSONNEL - IN-HOUSE: Since Boeing is in the process of moving their 30 in-house personnel out during the month of August we start now replacing them by additional Hayes in-house personnel. ✓

B 7-31

NOTES 7-30-62, Change

1. C-1: S-I - S-I-3 is in M-DUAL for final checkout, completion is scheduled for 8-1-62. Shipping date is in question due to the installation of a lift span by Southern RR below Florence, Alabama. River may be closed to MSFC from 9-19 to 9-13-62. Checkout problems appear to preclude ship before 8-19-62. Measures are being investigated to maintain present launch date. ✓

Chrysler Contract - CCSD has signed contract, which was taken to Hos on Friday, July 27. It is expected to be released today. ✓

Michoud - Review of Operations past week has indicated a mandatory requirement for M-MICH to have more flexibility in assigning tasks to Vector or Macon Rust. Study is underway to accelerate procedures. ✓

S-IV -

Battleship Testing - LOX chilldown is scheduled 8-1-62 with hot firing on 8-9-62. Closed loop helium heater test will be incorporated early in program. ✓

Dynamics Vehicle - presently in the insulation area, about 4 weeks behind schedule. ✓

All Systems Vehicle - Aft skirt is being fitted to tank assembly. PU probes did not pass vibration tests and were returned to the manufacturer for rework.

SA-5 - Common bulkhead is being fitted in aft bulkhead. A fix has been determined for the aft interstage. ✓

SA-6 - Common bulkhead was rejected for production use, due to out-of-roundness and undersized "T". The forward dome of SA-7 is being prepared as replacement. ✓

2. C-5: General - Mr. Holmes approved implementation of MSFC's definite contract plan and schedule as presented to Hos on 7-10-62.

S-IC - Negotiations on Facilities contract to support Boeing Michoud operations were completed for signature on 7-27-62 with an estimated total of approx. $14.8M of which $2.0M will be from C of F funds. Approximately $3.0M are available for obligation yet.

Boeing proposal to utilize larger tank skin segments has been dropped due to non-availability of plate size required and major tooling redesign. ✓

F-1 Engine & Component Testing - Rocketdyne is having serious problems with high pressure ducting. Failures emphasize need for specialized manufacturing and design experience. ✓

First F-1 Mock-up delivery to M-ME is scheduled for 7-31-62. ✓

S-II - Negotiations progress has been slow and difficult. Contractor is offering a great deal of resistance on all issues. This is complicated by the fact that precedents set forth in the S-II negotiations will have a bearing on the forthcoming Apollo negotiations. ✓

S-IVB - Contract signed by DAC was handcarried to Hos by Mr. Mauer (MDO) and Mr. McCulloch (M-SAT) for discussing the scope of work with Mr. Rosen. Test Facilities is still the unresolved problem area. Two possible solutions exist a) DAC to provide the non-severables and b) NASA to obtain a lease arrangement with DAC for the test site. ✓

3. Apollo: MSC and MSFC have interim meeting on C-IB Program today (7-30-62) at MSFC. ✓

→ Does this include High Bay area?
B

NOTES, 7-30-62, MAUS B 7-31

1. LONG RANGE PLAN - A memorandum was received from OMSF requesting submission of OMSF Long Range Plans not later than August 20 in order to be incorporated in submission to Mr. Hyatt's Office September 4, 1962. MSFC is to use the LOR program decisions and Mr. Hyatt's July 9, 1962, memorandum as guidelines. A list of projects included in the five year budget plan recently submitted to Bureau of Budget, was attached for further guidance. These projects included Lunar Data for Apollo Design, Lunar Logistic System, NOVA, Manned Space Station, Manned Lunar Base, Propulsion Systems for Super-NOVA Vehicle, and Manned Planetary Explorations. This requirement will be coordinated by CPO and will be included in the consolidated exercise to prepare the FY 63 Program Operating Plan, the FY 64 budget and the LOR final schedule package. ✓

2. LIQUID NITROGEN USAGE - The Western Operations Office reports a potential problem in the distribution and usage of liquid nitrogen. The new liquid hydrogen plant, Linde, Ontario, uses liquid nitrogen in the recycling stage. Also the Air Force is activating a number of missile sites in the general west coast area. Each of these sites creates a heavy demand for liquid nitrogen. The Air Force controls the production and supply of nitrogen and the Western Operations Office feels that we may have difficulty in setting up an equitable distribution plan for liquid nitrogen, especially in the Western area. R. D. Walker, our MSFC Propellants Manager, will investigate and report in more detail. ✓

H.M. Please see me on this, letter to McCall B

3. VIP PRESENTATION - The Managerial Data Center has prepared a VIP Presentation. We are now modifying the slides pursuant to the suggestions of Dr. Rees. The presentation will be available for you to see at your convenience.

4. OMSF DOCUMENTATION PROCEDURES-After last week's discussion of this point between Mr. Holmes and Dr. Rees, it has been taken off the agenda of the Management Council Meeting. Mr. Holmes has assured us that these procedures will not be used to tighten controls. We are encouraged by the recent directive providing MSFC additional reprogramming authority within construction projects. We have agreed that M-CP will work closely with Mr. Lilly, OMSF, in an endeavor to implement OMSF's procedures within MSFC as far as feasible and to support Mr. Holmes in coordinating his procedures with the Program Directors offices. ✓

5. GULF OPERATIONS STUDY - At the request of Dr. Rees and Mr. Gorman, we are making a study of the organization and management plan for Michoud, Slidell and MTF operations. Included in this study is an investigation of the number and role of support contractors. The findings of this study will be presented to Dr. Rees the second week of August.

H.M. → include me! B

NOTES 7-30-62 MRAZEK

B 7-31

1. BOEING PERSONNEL: Onboard as of 7-26-62: 333.

2. METEOROIDS: In connection with the activities of the MSFC Meteoroid Damage Working Group, informal inquiries have indicated that the surfaces of the Mercury capsules apparently have been subjected to only a cursory examination using a hand lens. Because these capsules represent the only significant objects recovered intact from orbit and because of the undefined meteoroid hazard, it is regarded as mandatory that they be subjected to an exhaustive investigation (microscopic and macroscopic) for cratering and other phenomena resulting from meteroid impact. A similar investigation of the capsules used for the sub-orbital shots should be made to determine any surface effects associated with reentry which might otherwise be erroneously attributed to meteoroids. Please prepare letter for Hglues W.M. → (copy to Gilruth, via Kuettner) B

3. MULTICELL TANK: Design was completed and all detail drawings of a 1/3 scale model (200 in. dia.) multicell test tank were delivered to Manufacturing Engineering Division. This test tank has a dual purpose in that fabrication and assembly techniques can be investigated and limited structural testing can be performed.

4. RIFT: We were informed by NASA Headquarters that $80,000 would be available within two weeks for Nuclear Rocket Development Station facilities design if we can definitely obligate the funds by the end of August. We see no reason why this schedule can't be met.

The AEC, on 7-20-62, granted a license to Lockheed to operate the Georgia Nuclear Laboratories reactor. Power operation of the reactor, and initiation of RIFT Radiation Effects Program, is scheduled to start on or about 8-20-62.

Lockheed has established an office in Huntsville to manage and coordinate their efforts in the RIFT Program with MSFC. Mr. Charles McKeeghan has been named Manager, (Lockheed Nuclear Space Program - Huntsville Office). ✓

→ W.M.
I have some new dope (7/31) on RIFT from Mr Webb. Suggest I discuss this with you, Scott, Brooksbank etc.
B

B 7-31

NOTES 7-30-62 Rudolph

1. Performance Specification, Saturn C-5/Apollo:

My office is progressing in the preparation of a performance specification for Saturn C-5/Apollo, LOR mode. I estimate that a rough draft will have been discussed with your people by August 6.

I feel that this document is of such import that I would like to discuss it with you before forwarding to Dr. Shea. O.K. ✓

2. I returned from my vacation today. ✓

NOTES 7-30-62 Stuhlinger B 7-31

1. OART SUPPORTING RESEARCH: As described in my NOTES of 7-2-62 (Attachment 1), our requested funding in the area of Applied Mathematics (Dr. Kurzweg's office) was drastically reduced in the OART FY-1963 preliminary fiscal guidelines. We then asked Dr. Ray Wilson from that office to visit MSFC for further discussions. His visit on June 26 and 27 paid off quite well; we have received a letter from Dr. Kurzweg stating that OART now plans $340,000 for MSFC in this sub-program for FY-1963, as compared to the $120,000 shown in the preliminary guidelines. We have received no other significant feedback from OART concerning our July 9 submission for the OART Programs of Space Vehicle Systems, Space Power, Electronic Systems, and Research. ✓

2. OMSF SUPPORTING RESEARCH: Mr. N. Kafel from OMSF informed us that his office submitted a request for $2 M for Vehicle Technology, and another one for $2 M for Propulsion Technology, to Dr. Seamans. These amounts are intended to be given to MSFC, but earmarked for specific tasks within our Supporting Research Program. ✓

E.S. task areas, hope!! B

3. RESEARCH INSTITUTE: Dr. Smull has called a meeting for Tuesday, July 31, in Headquarters to discuss Research Institute funding. Dr. McCall, Dr. Shelton, Mr. Thompson and I from MSFC, Drs. Pow and Hermann from the University of Alabama, and a large number of Headquarters people will attend. The expectation is that something concrete will follow the long period of discussion. ✓

4. LUNAR LOGISTICS SUPPORT: Research Projects Division recently made a survey of the facts, plans, and recommendations pertaining to the scientific and technological tasks to be solved by unmanned lunar logistics support vehicles. Do you think that a "Technical Note" on our findings, for internal distribution, would be desirable? ACTION REQUIRED. ✓

5. PARTIAL RPD MOVE: Part of Research Projects Division (Mr. Thompson's Systems and Instrumentation Branch and Office of Applications) will move to Bldg. 4723 on July 31. ✓

Yes. B

Attachment #1 - NOTES 7-2-62

B 7-31

NOTES 7-30-62 WEIDNER

1. WIESNER COMMITTEE (PSAC): I learned from Rocketdyne that on 8-8-62, they will be visited by a group from the PSAC Committee, probably chaired by Golovin; subject: Rocketdyne's thoughts on uprating the F-1 and J-2 engines. Thrust, Isp, expansion ratio, propellant additives; e. g., small fraction of fluorine in LOX should be considered.

2. RL10 PROGRAM: P&WA has completed two throttling tests in which the engine thrust was reduced to approximately 50% and 25% of rated thrust, respectively. A facility abort system terminated the second run after ten seconds. The 25% thrust level was reached just prior to abort. Lewis Research Center has completed two tests toward determining the maximum throttling rate of change that can be obtained. The thrust level was decreased from 100% to 40% in two seconds in the first run and was decreased from 100% thrust to 40% thrust in one second during the second run.

3. M-1 PROGRAM: The lack of availability of facility funding remains a problem in maintaining the planned rate of implementation of the M-1 program. This problem has been compounded by a possible removal of $140,000 of design funds from the M-1 program to be applied to S-IVB facility design which would not be paid back until FY'63 C of F funds become available. This action would cause facility design funding to terminate on 7-31-62 instead of 8-31-62 as originally planned, and not to be resumed until FY'63 C of F funds are available.

4. F-1 PROGRAM: An F-1 engine system test took place 7-26-62. The test lasted for a programmed duration of 8.8 seconds at a thrust of about 1400K. This was engine No. 006 and was identical to engine No. 007 with a flat face 5U injector. This engine was specially instrumented to try to determine amplitudes of fuel pressure oscillations at the engine manifold and injector.